ART. II. — ARCTIC EXPLORATION.

WHEN the United States government sent an expedition, nearly three years ago, to reach the North Pole, people naturally supposed that an Arctic mystery of centuries would certainly be revealed, that the much-talked-of open Polar Sea would be navigated, and that geographical questions which have for a long time occupied the attention of the adventurous and the learned would finally be solved.

Governments do not often assume the charge of such undertakings. They have sometimes countenanced private expeditions and lent them aid, but have seldom originated them. With respect to the Arctic regions, few and rare have been the ships sent out for purposes of discovery exclusively at government cost. Upon the merchants has usually fallen the expense of the venture. Merchants have, indeed, always stood in the front rank of civilization. In geographical discovery they have uniformly been the pioneers. It was mercantile enterprise that first opened the Atlantic to the gaze of civilized Europe, that brought into view the Cape of Good Hope and an ocean route to India and the Spice Islands; that sent Columbus across the Western water to a new world, and Amerigo after him with a name ready coined for a continent.

The first rational conjectures which the civilized world entertained respecting the North were derived from the old Phœ-

nician traders. These adventurers had, however, no science to guide them in their bold undertakings. They had no conception of geography. The geographical knowledge of De Gama and Columbus was necessarily very limited; but they possessed, like the Phœnicians, and like the Arabs and the Northmen of a later date, the true spirit of mercantile adventure,—the spirit to discover new lands for new avenues of trade or plunder, to obtain the rich products of distant countries for themselves and their patrons; and they went forth and did great things with no loftier purpose than the pursuit of gain, and with nothing more at their back than the simple countenance of the government of the countries from which they sailed.

The same mercantile spirit led to the first Arctic discoveries. To English and Dutch merchants we owe the first practical developments in Arctic geography. In later times a thirst for scientific inquiry added zest to the former hopes of commercial advantage; but not until the failure of the expedition of Sir John Franklin had convinced the world of its impracticability was the idea abandoned of finding a route for commerce across the Arctic seas to the Pacific Ocean and the Indies. When, therefore, a powerful government, famous for its spirit of maritime adventure, voluntarily undertook the task of reaching the North Pole and solving the problem which had at length become a purely scientific one, the highest expectations were naturally excited, not only among those interested in scientific research, but among the people who were concerned in the national renown. In fact, so many and so persistent had been the efforts of scientific men throughout the civilized world to induce their respective governments to undertake the task of fully clearing up the Arctic mysteries on a sufficiently large scale to insure success, that the applause was universal when the United States government had assumed the responsibility. For no purely scientific purpose has there ever been any such formidable array of resources in that quarter. Four powerful and well-equipped steam-vessels and one steam-launch (which made a most spirited voyage) have been engaged, from first to last, in this important service, at an expense of scarcely less than half a million of dollars, and now it is rather humiliating to own that

we have in reality advanced very little nearer to the North Pole than we were before. One brave man has died. A great deal of bravery has been shown, a great many lives have been imperilled, a great deal of money has been expended, and practically nothing has been done, — nothing, indeed, toward the accomplishment of the main object, except it be to prove that Captain Hall was on the right track, thus confirming the oft-repeated views of his immediate predecessor. The propriety, however, of merely proving another man's predictions at so great a cost may be questioned. Dr. Kane, Dr. Hayes, Judge Daly, and most of the English explorers and writers upon the subject, have publicly favored the route through Smith Sound; and had Dr. Hayes's repeatedly published plan been accepted by the government we believe that we should not now be called upon to record another failure. This plan was simply to establish a depot at the mouth of Smith Sound, with a sailing-vessel as a store-ship and tender to the steamer, which is to push northward, and a party of Greenland hunters at that depot to secure a constant supply of fresh food, the region being prolific with game, such as reindeer, water-fowl, walrus, seals, and white whale. Of the former alone, Dr. Hayes's party, during their ten months' stay at Port Foulke, shot upwards of two hundred and fifty. This position has the merit of being on the north side of the great Baffin Bay ice-barrier, while Godhavn, Disco Island, where the government deposited its additional stores and established its base of operations, is on the south side of it. Practically speaking, for all purposes of Arctic exploration, Disco Island is not in the Arctic regions at all, and, as a base of operations, has not a single advantage over the Navy Yard at Brooklyn; for it is always accessible from the south, while to return there from the north is equivalent to wintering this side of the ice; and to winter in New York would be greatly preferable, both in point of comfort and expense, to wintering at Disco Island.

The public interest which has been excited recently, not only by this expedition of the United States government, but by the gallant efforts and important discoveries of the Germans, Swedes, Norwegians, and English in the Spitzbergen

and Greenland seas, has seemed to us to present a favorable occasion for a general review of the subject of Arctic exploration from the earliest times; and, in order that our readers may have a clearer understanding of the matter than they would from the cursory reading of individual narratives, we propose to show how, while vast regions of the earth have been steadily brought into view, and curious developments made in science, failure after failure, as to the primary motive, has followed in succession, since the discovery of America, until we have at length reached the culmination of a long period of adverse fortune in the disastrous Polaris expedition.

From time immemorial the Arctic regions of the earth have been regarded with something akin to awe, to that feeling which is, unconsciously to ourselves, ever awakened by the contemplation of the inaccessible. Poets and prose romancers of every age have clothed the North with a forbidding mantle. Its immense ice-fields and ice-mountains, its impenetrable fogs, its summer of day and winter of night, its fearful storms, its strange inhabitants, have all combined to inspire a feeling almost of dread at the mere mention of the name.

Pythias, the Greek mariner and trader of Marseilles, who was the first to pass into the Atlantic between the Pillars of Hercules, in the age of Alexander the Great and in the time of the great Phœnician prosperity, reached his *ultima Thule* probably at the Shetland Islands, and there discovered in a dense fog sweeping from the north a region which he declared was "neither air, earth, nor water"; and, coming down through the period when the civilized world regarded the earth as a vast plain, with mysterious boundaries, and Hyperborea as a region where golden gardens glowed, inhabited by a race of immortals, we find, in the time of Columbus, when the first crude attempts were made at the construction of charts, that which was put forth as the real scarcely less wild, in its relation to the actual truth, than the ancient fables; for we find the whole region drawn for us by the chartographers of the time — by Martin Behaim, by John Ruysch, by Orontius Finæus, and others of that highly imaginative and superstitious period — in the most purely imaginative man-

ner. A good example of this we find in Ruysch's *Universaliter Cogniti Orbis Tabula*, published in Rome in 1508 by Marco Beneventous, in his revised edition of the maps of Ptolemy. The extreme northern regions of the earth are there depicted with a huge rock pointing to the Pole Star and bathed by the waters of an open sea, while at the four quarters are four great islands, between which flowed four great rivers, and these rivers drain the superfluous waters of the ocean into a great basin about the Pole, whence they plunge wildly down into the innermost abysses of the earth. These islands were supposed to have a salubrious climate, were clothed with verdure, and one of them at least was inhabited by a race of pygmies, who sometimes descended to the South, causing great mischief, — an idea which no doubt originated in the contests known to have taken place in Greenland between the Esquimaux or Skrællings (so called, in derision, from their diminutive stature) and the Northmen in the thirteenth and fourteenth centuries.

Ruysch's map was subsequently modified by Finæus in his famous map "cut out in the fourme of a harte," and published in 1531; but on both there is the same rock pointing to the Pole Star, the same islands, and the same flowing rivers discharging the superfluous waters. In fact, there was nothing, however improbable, that men would not then believe concerning the North. Beside fabulous islands at the four quarters about the Pole, there were others which rose from the sea and again sank away as mysteriously; fabulous beasts were on the land and fabulous monsters were in the water; and marvellous influences, powerful enough to draw a vessel's bolts or stop her course or change it, existed everywhere in the Arctic waters.

No rational ideas were, indeed, entertained of Arctic geography until nearly a century after the discovery of America. Such actual information as was had was derived from the meagre records of the brothers Zeni, whose long residence in Friesland, which was doubtless the Faroe Islands, in the thirteenth century, made them fully acquainted with Norse geography, which was necessarily most imperfect, since these hardy people steered their course from headland to headland

as did the equally enterprising Arabs of the South, or followed the flight of a raven or the drift of a plank or post without having the least thought of determining their position by observations of the heavenly bodies.

For a long time, however, this vague and uncertain information of the Zeni was withheld from the world, and its publication was, indeed, not called for until after the time of Columbus, when the spirit of maritime adventure inspired every one who could communicate any information to come forward with it, hoping for profit in the great scramble then taking place for the possession of the newly discovered lands. The records of the Zeni were not deemed important until 1532, when Zeigler obtained some portion of them, and gave to the world the first approach to a reasonable plan of the Arctic regions. Since that time the development of Arctic geography has slowly advanced.

The early stages of this development mark the most spirited period of maritime enterprise known in history; and, since all Arctic exploration was but an outgrowth of this universal spirit of discovery, it may not be out of place for us to go back a little and seek a *motive* for the first attempt to navigate the high seas in a direction which ultimately led as well to the north as to the south.

We find it in the period of the Crusades, when the civilized world was supplied with the rich and greatly prized products of the East by the old channels of the ancient Phœnician traders through Damascus and Babylonia, and some centuries later monopolized by the Venetians, who held control of the Alexandrine trade.

In the year 1291, Pope Nicholas IV., thinking to strike a blow at the Saracens, wrote to all the kings of Christendom, then engaged in the rescue of the Holy Sepulchre, enjoining it upon them to forbid their subjects from trafficking with the heathen. Whatever may have been the effect of the Pope's letter upon the people against whom it was aimed, it was the cause of great distress to the Christian merchants, and of great inconvenience to the whole of Europe. Being forbidden to hold commercial intercourse with the heathen by the old land channels, the East was now sought by water.

Little by little the hardy and enterprising mariner, backed by the equally enterprising merchant, crawled along the shores of the Mediterranean, and finally, passing with confidence through the Straits of Gibraltar, began, in the same manner, to crawl from headland to headland along the coast of Africa, confident at every turn of the shore of finding an unobstructed track to the rich and wondrous East.

The persistency with which this effort was pursued is only equalled by the spirited determination, at a later period, to find a route for commerce to the same quarter of the earth by way of the northern seas.

It was not until after the lapse of two centuries that the entire western coast of Africa was traversed. The Cape of Good Hope was finally doubled by the Portuguese, and a watery highway thus opened to India and the Spice Islands, at the same time that a mariner in the employ of Spain, more bold than any of his contemporaries, convinced that the world was round, and willing to stake his life upon the venture, fearlessly left the land behind him, and sailed, as he believed, direct to that same "East" — that same land of spices, costly silks, and precious gems, the land of the powerful and romantic Khublai Khan, whose dominions were without limits and whose wealth was fabulous — by sailing to the west.

How great was the distress occasioned in various quarters by the diversion of trade during these two hundred years following the issuing of the Pope's letter, and how fully recognized was the importance of the new era which had dawned upon the world, is illustrated by the following extract from Peter Martyn, dated February 4, 1499.

"But the Portugues, pursuing their course, crossed the equinnoctial, and in another way seek the trade in spices. They drain to the marrow the King of Calicut, and out of the Alexandrine and Damascus merchants, wherever they see there vessels on the high seas, they chase them, or sink them with cannon-shot. We suspect that this business must be very damaging to the revenues of the Babylonian Sultan; nor can it be profitable to the Venetians, as so many suppose. For from Ancient times, the traffic of the Venetians in the Marts and mouths of the Nile was a source of power and riches to the Sultan."

It was no small thing in those days to believe the world was

round, when the proof thereof was brought to the practical test of crossing the Atlantic Ocean. The idea of new lands existing beneath him was of course not new or original with Columbus, and in this connection it is interesting to refresh our memories with the following lines from Pulci's poem, which gives us a most circumstantial prediction of the existence of a Western world. In this poem the Devil, alluding to the vulgar superstition respecting the Pillars of Hercules, thus speaks to Rinaldo: —

> "Know then this theory is false. His Bark
> The daring mariner shall urge far o'er
> The western wave, a smooth and level plain;
> Albeit the earth is fashioned l ke a wheel.
> Man was in ancient days of proper mould,
> And Hercules might blush to find how far
> Beyond the limits he had vainly set,
> The dullest sea-bird soon shall wing his way,
> Man shall descry another Hemisphere,
> Since to one common centre all things tend;
> So earth by curious mystery, divine,
> Well balanced, hangs amid the starry spheres,
> And in that Hemisphere are races strange,
> Of habits primitive, compris'ng empires,
> Dwelling in cities vast and castles tall."

This was published between 1432 and 1487, and how nearly the prediction was fulfilled we all know. Yet Columbus did not entertain the idea that a great continent lay between the western coast of Europe and the eastern coast of Asia. He died in the belief that he had looked upon the mainland of Asia, when he was really only off the coast of Cuba. He even made his people swear that it was Asia they were looking upon.

Many centuries before this, however, at a time when the bold voyage of Pythias and his *ultima Thule* were still fresh in the public mind and were spoken of freely, we find the same idea vaguely foreshadowed by Seneca, who thus prophesies: "Ages shall come in which Oceanus may unloose the bonds of things, and a vast land may be exposed, and Typhis may discover new worlds; and there may no longer be an *ultima Thule* on earth."

How erroneous the calculation at sea made by Columbus and the mariners of his time, and yet how completely the rotundity of the earth was then believed in, and the superior value given to the western route proved, is shown by the following from Peter Martyn in his *In Janum*, for a translation and rendering of which we are indebted to the accomplished scholar and geographer, Mr. J. Carson Brevoort. It is addressed to Cardinal Ximenes, on the 1st of January, 1506, and first published in 1511. He says: —

> "The men of Portugal may find a way
> By Afric's shores, to seek the spices rare;
> But this is courage light compared with him,
> Columbus, who the western seas has crossed,
> Opening to Spain new empires, islands rich,
> With golden treasures long concealed, lying
> Towards the Antipodes, or farther side
> Of the terrestrial sphere, where people walk,
> Compared with us, their feet upturned,
> Which must be thus, for our great orb
> Hangs free in space, from every side,
> A sphere in form, and central in the world;
> Thus day with us is night to them, as seasons
> Are reversed to those who in the nether tropics dwell."

If the general belief in the rotundity of the earth gave rise to a new era in maritime affairs, the magnetic needle gave confidence. The acceptance of the one was nearly coeval with the discovery of the other. That dark grayish-brown metallic ore which possessed the magic power of fixing a piece of steel in the plane of the meridian was a familiar toy to the ancients; but they little knew the treasure they possessed. When first applied to navigation, we find Peter Martyn thus enthusiastically writing of the magnetic needle in the same poem which we have already quoted: —

> "No more the seaman fears night's darkest shades
> Nor tempests' blinding mists, if he but watch
> The magnet buried in its Cap-like pyn,
> Lashed on the poop, that faithful points
> The Pole, like as the Sun by day,
> A faithful horologue it is to man."

Although not directly relevant to the historical aspect of our subject, we have thought the foregoing necessary to the illus-

tration of a motive to Arctic discovery; for after the world was proved to be round, — by the Spaniards sailing to the west, and the Portuguese to the east, and meeting each other midway, — we find the Pope dividing the world by an imaginary line running through the Cape de Verde Islands, giving all newly discovered lands which lay to the westward of that line to Spain, and all lying to the eastward to Portugal. These, being then the two most powerful maritime nations of the earth, soon proved themselves able to hold possession of the South Sea, which washed the shores of their newly acquired dominions; so that the English, Dutch, and French, their only rivals, had no resource but to seek the rich treasures of the East by way of the North.

The first attempt was made in 1497 by John Cabot, a Venetian, then in the employ of the English king, Henry VII., who, now that the great pilot of Genoa (whom he had barely missed employing) had electrified the world with a discovery which, according to Hakluyt, men "affirmed to be more divine than human," was willing, while avoiding the track of the Spaniard, to give countenance to "novel speculations and daring enterprises." Cabot was allowed to have five ships, which were to be fitted "at his own proper costs and charges," and to sail to "all parts, countries, and seas of the East, of the West, and of the North." Cabot set out in the spring of 1497, and, on June 24, "about five of the clocke, early in the morning," discovered a land which they called "Prima Vista." It is claimed that Cabot — and this is the principal interest at this time attached to the expedition — reached the mainland of the New World on this voyage "fourteen months before Columbus beheld the American continent, and two years before the lucky Florentine (Amerigo Vespuccio) had been west of the Canaries." John Cabot was followed by his son Sebastian, who, to quote his words, as we find them in Hakluyt, began to sail toward the northwest, not thinking to find any other land than that of Cathay, and from there turn to India; but after "certain dayes I found that the land ranne towards the North, which was to me a great displeasure." There is little doubt that Sebastian Cabot touched the Labrador coast and traced it to latitude 67° before returning south, "ever

with the intent to find the said passage to India," until he reached Florida, when, victuals failing, he "departed from them and returned into England." His own brief account of his purpose is in these words: —

"Being aware that if I sailed in a northwesterly course I should come to the Indies by a shorter route, I at once imparted my ideas to the king, who was much pleased with them, and fitted me out three caravals, with all the necessary stores and equipments. I began to sail towards the northwest with the idea that the first land I should make would be Cathay or China, from which I intended to direct my course to the Indies."

The French did not take the field until 1524, eighteen years after the death of Columbus, and five years after Magellan had doubled the southern capes of America, crossed the Pacific Ocean, reached the Moluccas, and first ploughed with vessel's keel a track around the globe.

Francis the First was then king of France. The Spaniards and Portuguese held possession of the South Sea, and proved themselves able to maintain their right to all newly discovered territories as held by them under the Pope's bull of partition. The English, French, and Dutch were excluded from the South, and the most they could do was to capture an occasional galleon of their enemies laden with golden ingots. "It is strange," said Francis, impatient under the restraints which necessity imposed, "that the Lord should have forgotten us all in his will"; and accordingly he sent Verazzano to find a northern Magellan Strait, — the northern passage to the Indies.

Verazzano touched the American coast near the present city of Savannah, and afterward, with indefatigable zeal, followed the shore northward to about latitude 50° without discovering the desired passage. It has been made clear, however, by the researches of Mr. J. Carson Brevoort, that Verazzano entered the harbor of New York, and discovered the river which Hudson subsequently navigated, and which now bears the name of that great mariner.

Meanwhile the kings of both Spain and Portugal, hearing of the efforts of the English and French, resolved to discover for themselves whether there was a shorter route to the Indies

than by way of the South Sea; and we find the Cortereals and Gomez seeking the northern passage, to the great displeasure of their rivals.

The next enterprise of which we have knowledge was a venture by an English merchant, Robert Thorne, of Bristol, a great patron of maritime enterprise, in "two faire ships well manned and victualled, having in them divers cunning men, which set forth out of the Thames to seek strange regions," May 20, 1527. Little is known of this expedition further than that they reached latitude 53°, where they encountered a "marvalous greate storme," in which one of the vessels foundered, while the other made a harbor in what is now St. Johns, Newfoundland, where there were already gathered French, Portuguese, and Spanish fishing-vessels,—a circumstance which shows how important, even from the beginning of the exploration of America, were the cod-banks of the Western Atlantic. Indeed, it is an open question whether these banks were not visited by the old Basque and Biscayen fishermen long before the time of Columbus; for these hardy men brought their "bacallaos"—that is, "stock" or "stick" fish, cured without salt—from some mysterious place in the West, long before America was thought or dreamed of, except by the old Northmen from Greenland and Iceland in the early years of the eleventh century. These fishermen had their "Terra de Bacallaos," their "Terre de Morue," and it is not at all improbable that this land was the "Terra Nova" of the Cabots, the "Hilluland" of the Northmen, the "Kabeljanland" of a later day, and "Newfoundland" afterward; and now, as then, rich in wealth gathered from the sea, which, enticing Europeans to America, opened the way to the discovery and occupation of Canada.

This last great event in northern discovery was originally brought about by Jacques Cartier, who entered the Gulf of St. Lawrence in 1534, and, believing firmly that this was certainly the northern Magellan Strait, which he had discovered at last, returned to France for a larger outfit with which to pursue his course to the Indies. That it was not a strait, but simply a river, was proved when the ships of the second voyage reached the native village of Hochelaga, named by the French Mont Royal, since corrupted into Montreal.

These were the principal efforts made in the busy, early days following the great voyage of Columbus. They were all without immediate profit to their projectors; and for a time the spirit of enterprise in that quarter subsided. Then there was a cry for the northeast, and enthusiasm in behalf of this route to the Indies was very great. Here lay the "Cape Tabis" of Pliny, the North Cape of Asia, the northern Cape of Good Hope, and, when rounded, the glorious East would surely be brought into view.

About this time there was founded in London an association of merchant adventurers, afterward known as the Muscovy Company. Its object was trade with the northern parts of Europe and Asia, and they hoped to reach India. To inaugurate this project, a great expedition was set on foot to double the mysterious North Cape.

It was a bold undertaking considering the ignorance then prevailing with respect to the regions to which the expedition was expected to penetrate. The most confusing ideas then universally prevailed. Very little was yet known of America, and neither geographers nor discoverers had been able to see that Asia and America were not one. Cortez had despoiled the Aztecs, and Pizarro butchered the Incas, and yet Mexico was thought to be a part of India. On the chart of Orontius Finæus, published in 1531, the capital city of the Montezumas lies midway between China and the mouths of the Ganges, and the distances *overland* from one place to the other were quite inconsiderable. It was in 1492, while Columbus was absent on his first voyage, that Martain Behaim completed his famous globe, which represents the Atlantic Ocean on the one side washing the shores of Asia, and on the other side washing the shores of Europe, with Japan occupying a position midway between the two continents in the great sea over which are scattered the Azores, Antilla, St. Brandan's Isle, etc.; yet when the Pacific Ocean became known, and the western coast of South and parts of North America rudely outlined, the great projecting tongue of land was still joined on to Asia at the north. That there might be an opening somewhere found, showing the separation of Asia and America, seems first to have occurred to Sebastian Cabot, who stood at the head of the Muscovy Company.

That grand old mariner and "formost seaman of his time" now busied himself, as if still a young man, to raise the money and equip the ships that were to pass over the unknown sea of the north, and with America on the left and Asia on the right reach the lands of which Marco Polo had written so glowingly and Sir John Mandeville so quaintly, the paradise of all the earthly hopes and joys to which all Europe then aspired.

The expedition comprised three ships, the funds being raised by subscription in shares of "twenty-five pounds" each. Six thousand pounds were thus obtained altogether.

It is a notable circumstance in the history of navigation, that the ships were English ships now for the first time sheathed with "thinne sheats of leade," a method of protection long before adopted by the Spanish and Portuguese. Altogether the preparations were made on the most elaborate scale; the ships were built exceptionally strong, eighteen months' provisions were put on board, and for both the moral and the physical welfare of the people the most perfect arrangements were made. Cabot says, "The like was never in any nation seen, used, or known." His instructions enjoin the strictest observance of morning and evening prayers, to be said by the chaplain or master, and there is to be no "ribaldry or ungodly talk, dicing, carding, tabling, nor other devilish games." He warns them against "all factious and false tales." The natives of all countries are to be treated "with gentleness and courtesy, without any disdain, laughing, or contempt," but they might be brought on board and "made drunk with wine or beer, that you shall know the secrets of their hearts."

The King wrote a letter addressed "to all kings, princes, rulers, judges, and governers of the Earth," and after saying that the heart of man "desireth to love and be loved, also to give and receive mutual benefits," he represents the duty of showing kindness to strangers and especially "to merchants who wander about the world, search both the land and sea, to carry such good and profitable things as are found in their countries to remote kingdoms and regions." After this the letter states that a valiant knight, Sir Hugh Willoughby, and other twenty servants, had departed from England, and the

King, after desiring for them free passage by their regions and dominions, promises, in like manner, to accept their servants.

We have been thus particular in reciting the details of this memorable expedition because it marks an era in geographical discovery. It may, indeed, be regarded as the real beginning of that persistent effort made by the maritime natives of Northern Europe to find a commercial route to India by the North Sea, instead of the South Sea, a northern Magellan Strait,—an effort which, although neglected at short intervals, was never really abandoned until its impracticability was proved three centuries afterwards.

Willoughby's two companion ships were commanded by Chancelor and Adams. The fleet sailed from England, May 23, 1553, was among the islands off the coast of Norway July 14, and soon afterward passed the North Cape of Norway. Then the fleet became separated in a tempest. Chancelor with his ship got into the White Sea, until then unknown to Englishmen, after having gone so far to the north "that he found no night at all, but a continual light and brightness of the sun, shining clearly upon the great and mighty sea." Here his party wintered at the little native town of Archangel, from which place Chancelor went to Muscow overland, and, being well received by the Czar, opened a valuable channel of trade with the Muscovite Empire, until then but little known to Western Europe.

Willoughby and Adams, not being able to find Chancelor, stood on in a northeasterly direction until they sighted land, which was, no doubt, Nova Zembla; but, finding no landing-place upon the bleak, snow-clad rocks, they then tried to go north, but were interrupted by ice; then they sailed southwest until they reached the coast of Lapland, not far from the White Sea, where Chancelor had already found safety. But they held to the west until they found a small harbor at the mouth of the river Arzina, where they concluded to pass the winter, having failed to find the port of Vardœhuus, which is situated on the north coast of Lapland, near latitude 70° N. and longitude 30° E., at which place the fleet was to rendezvous in the event of separation.

Some two years afterward a party of Russian fishermen,

while wandering along the shore, were astonished to discover two ships frozen in the ice; and upon boarding them, the crews, to the number of seventy, were found dead, either from famine or excessive cold. The last entry of Willoughby in his journal is a description of journeys made to discover inhabitants, but "without finding any people, or any semblance of habitation."

Upon the return of Chancelor the company of merchant adventurers who had fitted out this grand expedition were so well pleased with the prospects of trade with Russia that they at once assumed the name of the Muscovy Company, and in 1555 sent Chancelor on a second voyage, during which he again reached Moscow. He learned that there was every year traffic held between this, the then capital of Russia, and the East, also with the North Sea, and he returned with a Muscovite ambassador and a cargo valued at twenty thousand pounds. But this costly cargo, together with the commander's life, was lost in Pitsligo Bay, where the ship was wrecked. The ambassador was, however, saved, and arrangements were promptly made with the Muscovy Company, which opened at length an extensive traffic between Russia and Central Asia by way of Archangel and Moscow.

No such profitable fruits, however, came from the west, where a still more practicable field was thought to lie. This was surely a shorter way to India than by the northeast. Besides, Willoughby had failed, and, so far as reaching the Indies by water was concerned, so had Chancelor and Burroughs, who followed him the next year. The cry now was for the northwest. It was first raised by Martin Frobisher, of whom Barrow thus speaks in his "Naval Worthies of Elizabeth's Reign":—

"He was one of those men who, by their zeal, energy, and talent, acquired and preserved for Queen Elizabeth the proud title of 'Sovereign of the Seas'; but few, however, know that he earned his early honors in a northern clime; few know that for fifteen long years he was continually pressing upon the minds of his friends and the merchants of the city of London the desirableness of renewing the attempt to find a passage by the Northwest."

Frobisher had everything to contend with, and he showed

himself worthy of the conspicuous place he subsequently held in the fleet which destroyed the Spanish Armada, by his perseverance, courage, and good seamanship. Not least among these obstacles was the idea to which men seemed, after more than three quarters of a century from the period of Columbus's first voyage, still to cling, that the West Indies were a part of Asia. "It was the conclusion of the Scholes," wrote Willes, when opposing the voyage of Frobisher, that "the West Indyes are a part of Asia. *Quidquid præter Africam et Europam est, Asia est* — whatsoever land doeth neyther appertayne unto Afrike nor to Europe, is parte of Asie."

Willes alludes to the globes of Mercator and the "Sea Carde" of Molitius, and quotes them as showing the unity of the continents, and extending "the West Indishe lande even to the North Pole, and, consequently, all passage by sea is cut off that way"; and here we find an idea set forth which one would think quite sufficient to dampen the ardor of even brave Frobisher, for on the Sea Carde of Molitius, in which Willes has firm faith, Asia and America are not only one, but Greenland is made "firme land with America, the North parte continent with Lappenlande and Norway," thus making it quite impossible that any ship could reach India by the north, inasmuch as the land interposed an impassable obstacle everywhere. At the present time, when we know how far Greenland is separated from Lapland, that there is a Behring Strait separating Asia and America, and that Davis Strait and Baffin Bay separate America from Greenland, such geographical speculations seem very absurd; but then it must be borne in mind that in those days there were no means of determining the longitude of a place, and that geographers, in constructing their charts, could only make the most vague conjectures as to the relative positions of lands lying along an east and west line. Distances were naturally confused, and different places seen by different persons were easily confounded.

For the sake of argument, Willes goes on: "Graunt the West Indies not to continue continent unto the Pole; graunt there be a passage betwyxt the two lands; let the goulph lye nearer us than commonly in Cardes we fynde it set, namely, betwyxt the 61 and 64 degrees North, as Gemnia Frisius in his mappes

and globes imaginith it, and so left by our countriman *Sebastian Cabot* in his table, yet doeth it not folowe that we have free passage to Cathayo." Then he proceeds to cite the Mediterranean Sea as an illustration, remarking how the narrow Isthmus of Suez blocks the passage from Alexandria to the Moluccas, and then observes: "In lyke manner, although the northern passage be free at 61° latitude, and the west ocean beyond America, usually called *Mer del Zur*, known to be open at 40° elevation, say the lande *Giapan*, yea, 300 leagues northerly above *Giapan*, yet may there be lande to hynder the through passage that may by sea, as in the example aforesayde it falleth out, Asia and America being then joined together in one continent."

Frobisher did not like this view, but declared, in support of his determination against all the "conclusions of the scholes," that to make a passage by the North Sea to the Indies was the only thing in the world remaining to be done by which "a notable mind might be made famous and fortunate." Columbus was eighteen years in realizing the great desire of his life, and Frobisher had only three years less to wait. But while the one achieved a brilliant success, the other undertook a hopeless task, and inaugurated a series of disastrous defeats.

Frobisher finally found a patron in the Earl of Warwick, through whose assistance an expedition was at last equipped, on the 7th of June, 1576, amid the firing of salutes, the fluttering of flags, and the waving even of the handkerchief of the Queen, who had sent a gentleman of her court on board "to make known her good likings of their doings," and wishing them a "happie successe."

It seems almost incredible to us at this time, that the fleet which set sail under such delightful auspices should have consisted of three vessels, whose aggregate tonnage was less than that of an ordinary fishing-smack, being respectively thirty-five, twenty-five, and ten tons' burden. Yet these small vessels braved the storms of the Atlantic, and were in latitude 61° on the 11th of July, with land rising before them like "pinnacles of steeples, and all covered with snow." They were then off the southern capes of Greenland, which being doubled Frobisher continued in a northwesterly direction, undaunted by

the circumstance that one of his vessels abandoned him, and his pinnace, with her crew of four men, was lost in a storm. In a few days he sighted land in latitude 62° 30′, and again in 63° 8′, which he named Queen Elizabeth's Foreland. Finding here a strait, he entered it fifty or sixty leagues. To this strait he gave his own name, which it still bears; and then, after some intercourse with a "salvage people, like to Tartars, with long blacke haire, broad faces, and flatte noses," he sailed for home with glad tidings that he had discovered a strait leading to Cathay and the Indies. The northern Magellan Strait was found at last, and Queen Elizabeth at once proclaimed her purpose to build upon its entrance a fort to protect her right to this, her exclusive route, from all comers and rivals whatsoever. It was reserved for our countryman, the late Captain Hall, to prove in 1861 that this so-called strait, whose discovery excited so much interest at that time, is only a deep bay.

Frobisher was intrusted with a much more powerful fleet the next year, — a circumstance not altogether owing, however, to the fact that a passage to Cathay had been discovered by him on his previous expedition; for some one of his crew had, as a mere souvenir of the voyage, brought home a small piece of a black mineral, from which some gold being extracted by a chemist, into whose hands it accidentally fell, it was believed that more of the same kind could be obtained. Merchants, with this understanding, were heartily willing to help the enterprise. More mineral was indeed found on the second voyage, but not of the same kind. It was worthless iron pyrites, resembling gold, of which they quarried out two hundred tons, and returned home, imagining themselves rich indeed, never once caring for the strait leading to the Indies.

Frobisher made a third voyage in 1578; but he mistook his reckoning in thick weather, and got into what is now Hudson Strait instead of Frobisher's. This time he was to have founded a colony; but the hardships and embarrassments of the cruise caused him to abandon all thought of it. Yet he confessed that had "it not been for the charge and care he had of the fleete and freighted ships, he could and would have gone through to the South Sea, called 'Mer del Sur,' and

dissolved the long doubt of the passage which we seeke to finde to the rich countrey of Cathayo."

Thus was the scheme of finding a passage by the north thoroughly inaugurated. Except in the trade with Russia overland from Archangel, no profit had, however, yet accrued from it to compensate for the outlay. The French abandoned the idea of a passage when they discovered the St. Lawrence to be a river, and settled themselves down to fishing and colonizing. The field was open to the English in both directions until the Dutch, in 1595, appeared as rivals in the field. Meanwhile Pet and Jackman, in two English vessels, attempted to sail around Asia, twenty-seven years after the disastrous voyage of Willoughby, and, passing through the Waigatz into the Sea of Kara, found themselves soon arrested and driven back by the ice, which is almost the first notice we have of any serious obstacle encountered from that cause in Arctic navigation. Hitherto it had been dangerous coasts or stormy and thick weather.

Imitating the example of the French, and realizing the value of the fisheries there, Sir Humphrey Gilbert, in 1583, attempted the colonization of Newfoundland, a project which ended only in disaster. Then, in 1585, "Divers worshipful merchants of London and the West country, moved by the desire of advancing God's glory and the good of their native land," formed a plan for another attempt, and, throwing aside, as they declared, all thought of gain, fixed their thoughts solely on the discovery of a passage to India. They purchased two vessels, the "Sunshine" of fifty and the "Moonshine" of thirty-five tons, and despatched them under John Davis, "a man well grounded in the principles of the Arte of Navigation."

Davis sailed from Dartmouth, June 7, 1585, and about a month afterward passed up the west coast of Greenland, which he properly called "The Land of Desolation." About latitude 64° he found, however, some green isles, upon which dwelt amicably disposed natives, and here they remained nearly a month, as Davis says, "to refresh ourselves after our weary travell." They also trafficked for furs, but a good breeze springing up they put to sea, and, steering northwest, crossed

the strait which now bears the name of its discoverer, and on the 6th of August made land and called it Mount Raleigh. This lies back of the present Cape Walsingham, which, projecting far to the eastward, narrows the sea between Greenland and America to about one hundred and eighty miles, thus forming Davis Strait. Here the ships were anchored for a few days, when they sailed south, doubled a promontory which was named "Cape of God's Mercy," and then stood west into a sound, now Cumberland, where no ice was seen, and where the water was "of the very color, nature, and quality of the main ocean." Keeping on their course for eighty leagues, without meeting with any obstruction, they became finally enveloped in dense fogs and storms, in the midst of which Davis decided to go home and report that they had found the passage.

Davis was sent again the following year with four vessels, and pursued much the same course, reaching this time latitude 66° 33′, whence he shaped his course southerly, but nothing important was accomplished, further than to give the commander a "perfect hope of the passage; finding a mightie great sea passing between the two lands west." During this voyage much heavy ice was encountered.

Again, the next year, Davis was in his old strait, but this time he was equipped on the assurance that the outfit could be paid for by fishing. Accordingly, his two largest ships were left at Gilbert Sound, on the Greenland coast, for that purpose, while he followed up that coast in a little clinker called the "Helen," the only description of which we have is that it "moved through the water like a cart drawn by oxen." In this craft he reached latitude 72° 12′, where he was arrested by adverse winds, while there was still an open sea to the northward. He was now farther north than a ship had ever sailed before, and lay a little to the south of one of the grandest landmarks of the Greenland coast, — a lofty mountain four thousand five hundred feet high, rising abruptly from the sea, and covered perpetually with snow and ice. Davis named this mountain Sanderson's Hope, after one of his patrons. Near its base, on the north side, lies at the present time the little Danish-Esquimaux colony of Upernavik, the northernmost colony of Christians on the globe.

The storm compelled Davis to stand to the westward; much ice was encountered on the way, and for two weeks they were in continual fear of shipwreck, yet they made Mount Raleigh at last; but, except that Davis penetrated a little way into the strait now called Hudson, he added nothing to what he had brought before, namely, disappointed hopes and illusive promises. The two fishing-ships returned separately.

The promised coming of the Spanish Armada, and the death of Walsingham, the Queen's secretary and a great patron of discovery, put an end for the time to all thought in England of a northern passage to India. But the Dutch now entered the field on the representations of the merchants of the United Provinces, that, inasmuch as the Spaniards and Portuguese held a monopoly of trade with India by way of the South Sea, and there was no doubt a passage could be found by the North, an expedition should be equipped to obtain some portion of the trade.

Accordingly, four vessels were fitted out, and they set sail from Trexel, June 5, 1594, on the track of Willoughby. At Kola, Lapland, the squadron separated, Barentz going northeast until he reached the extreme north point of Nova Zembla, which he could not pass on account of heavy ice. This was July 29. His position was latitude 77°, off what he called Ice Cape.

The other division of the fleet, under Cornelis Corneliszoon Nay, reached Waigatz Island, which lies between Nova Zembla and the mainland, and, passing it to the south, they stood northeast through the Sea of Kara, where Pet and Jackman had been in 1580. This was July 21. They found the water free from ice, but covered with floating trees, trunks, roots, and branches, which they correctly judged to have come down from some great river. The shores of Waigatz Island were "enamelled with herbage and flowers of every color, and were of an agreeable odor."

Finding the land on the south side of the Sea of Kara tending southeast, they suddenly made up their minds that it kept on in the same direction all the way to India, and, finding a pleasant climate, an open sea, and a southerly setting current to strengthen their convictions that they had found without a doubt the northern passage which had been sought after for

a hundred years, they, on the 14th of August, put their helm up and returned home to give the good tidings.

Convinced of the correctness of their idea, the government and merchants jointly fitted out seven ships, with merchandise suitable for the India trade, and despatched them under Barentz. But the Sea of Kara was not so amiable this time. A heavy storm drove in upon them from the northward, and forced them back through the Waigatz.

Still the merchants were not discouraged, but sent Barentz and Rijp the next year with two ships. Barentz was in favor of going by the Waigatz; Rijp was for trying by the north of Nova Zembla. Barentz yielding, they sailed nearly north, until they discovered an island which they called Bear Island (now Cherie Island). To the north of this, in latitude 80°, very much to the north of any point that had then been reached by any vessel, and almost as far north as any vessel has gone even to the present day, they discovered a very large island, which, from its sharp mountains, was called Spitzbergen.

Here the commanders again differed, Rijp abandoning the Nova Zembla route, believing that the true passage to China and India was to be found by this great land which they had discovered. But he was baffled everywhere by ice, and when too late in the season to try any other course he returned home.

Barentz, on the other hand, held southeastward to Nova Zembla, which being reached, he changed his course and doubled it to the northward August 26. Here the ship "wandered in fogs and floating ice," and was completely beset at last on the east coast of the island in latitude 76°, when, finding it impossible to extricate themselves, the people saw that they were doomed to pass through the trials and privations of an Arctic winter. At the present day this would not be considered a serious matter. It has of later years become a thing of such common occurrence that it is thought little of. But then they had no such conveniences and appliances for health and comfort as we have now. No vessel had ever before wintered in the Arctic regions, and we can readily imagine the terror with which the seventeen men of Barentz's crew saw the sun sinking beneath the dreary waste of snow

and ice about them, not to rise again for three long months. They, however, built a hut upon the shore, and managed to live through the gloomy interval; but in the spring, finding their ship immovable, they abandoned her altogether, and in two open boats they set out for the port of Kola in Lapland, which they reached August 25. After encountering incredible hardships, five of them died from sickness and exposure, including the brave commander, who perished almost at the outset of the journey, near the North Cape of Nova Zembla.

It will thus be seen that three routes by the North Sea to China and India had been tried in the century following the discovery of America, every one of which had baffled the daring adventurer, and brought in the end nothing but loss and disappointment to himself and patrons. Yet the project was not abandoned, and was from time to time persisted in with redoubled energy. The motives to all this zeal we have set forth so fully that the subsequent efforts in either of these directions may be very briefly related; for they were practically but repetitions of former failures, although they brought a steady increase of geographical knowledge.

Up to this time nothing whatever was known of the north coasts of Asia beyond the Sea of Kara, and nothing of the north coast of America. Nothing was certainly known of the North Pacific, yet, as the Spaniards steadily crawled up the west coast of America, it began at length to be understood that a vast continent lay between Europe and Asia. Then the "conclusion of the scholes" that America and Asia were united at the north began to be seriously doubted, and the fabulous "Straits of Anian," which every ambitious mariner was anxious to seek, came to be believed in. This strait was first drawn in the Ptolemy of 1513, but was afterwards more exactly set forth by Molitius and Mercator, and on the map of Locke. The idea of it may very probably, as Mr. Brevoort has suggested, have arisen from a faulty reading of the words *Mar Usiano*, which Schöner on his globe gives as the name of the sea bounding America on the north.

The Spaniards were very enterprising on the Pacific side, and sought to find these "Straits of Anian," that passage which they as well as the English, French, and Portuguese

had failed to find from the Atlantic side; and one of their number, Lorenzo Maldonado, actually declared that he had come through the straits in 1588. His motive was to sell the information to the English, but the bargain was never consummated, since he would not consent to pilot the way.

A few years later the Greek adventurer, Juan de Fuca, then in the employ of Spain, following the coast much farther north than any of his predecessors, came to the strait which now bears his name; but, without stopping long enough to explore it thoroughly, like Frobisher, Davis, and Rijp, he hastened back to proclaim the great discovery of the strait connecting the two oceans. The information not being prized by the Spaniards, he offered it to the English; but the English could not reach it without encountering the Spaniards and Portuguese, who held firm possession of all the South Sea, and De Fuca, now quite disheartened, returned to Mexico, where he soon afterward died.

About this time it was currently reported, and was generally believed, that a Spanish friar named Andreas had sailed through, from sea to sea, in a ship; but the rumor could not be verified, because the friar could not be found.

Thus was a fourth quarter opened for a trial to accomplish a short passage between Europe and India by the north. It was, however, never seriously prosecuted, until the Russians undertook it in the time of that enterprising monarch, Peter the Great.

The northeast route was practically abandoned with the disastrous voyage of Barentz, almost the only attempt at a revival of it being by Captain John Wood in 1676. One of Wood's vessels was wrecked on the coast of Nova Zembla in latitude 75° 59′, and he barely escaped with the other.

The public interest became now centred in the northwest and the north, to both of which a new interest was soon added in the discovery of vast schools of whales, seals, and walrus, both in Davis Strait and in the seas about Spitzbergen.

Having thus illustrated the motive to Arctic discovery, and traced the course of the early ventures, we will here leave the general chronological order which we have thus far pursued with respect to the entire field of exploration, and briefly trace

the progress of the work which has been done in different quarters; for, from the beginning of the seventeenth century, the history of the attempts to find a passage by the north has little interest, except such as is attached to the general progress of Arctic geography. To the routes of discovery hitherto pointed out we must now add the overland journeys and coasting voyages of Siberia and British America.

It was more than a hundred years after the Spaniards had traced the western coast of America as far north as the Straits of Juan de Fuca, before the Russians, after conquering the native tribes inhabiting the northern parts of Asia, appeared in any considerable force on the Asiatic side of the North Pacific. By these conquests and the steady advance of traders and hunters towards the Arctic Ocean, the civilized world first came to know of the vast expanse of Asia northward, and, in like manner, the traders and trappers of the northern part of America that it steadily expanded in like manner with Asia. But of the great arms which stretch out from either continent, nothing was known until 1729, when Captain Vitus Behring was despatched in that direction.

Behring set out from St. Petersburg, February 5, 1725; but did not reach Okhotsk, a distance of four thousand five hundred miles, until July 14, 1728. Here two vessels were built, and named the St. Peter and the St. Paul. Their first winter was passed near the southern extremity of Kamtschatka, in a harbor which was named after their vessels, Petropaulowski. By this year's work Behring showed the separation of the continents by passing through the narrow strait which now bears his name. He reached latitude 67° 18′, where no land was seen on either side, thus showing that the coast trended to the east on the one hand, and to the west on the other. Afterward these explorations of the coast were continued on the Asiatic side as far as Cape Yacan; but all efforts to pass that cape were, as they have since been, unavailing by reason of the ice.

The development of the long line of coast lying between Cape Yacan and the White Sea is due to efforts made at different times by Russian naval officers, hunters, traders, and Cossacks.

No further explorations in the track of Behring were made

until Captain Cook entered the strait in 1776, when that immortal navigator, after doubling the great promontory which marks the boundary of the strait on the American side in latitude 65° 45′, pushed north to latitude 70° 43′, where, encountering a "close and solid wall of ice," he bore away for the American shore, along which he found it impossible to proceed farther than the headland, which he named Icy Cape. Captain Clerke, who succeeded him in command, renewed the attempt the following year. It must be here borne in mind that the object was to effect a passage from the west to the east. Cook was under instructions to meet Pickersgill and Young, who were to seek a passage from east to west, on the old track of Hudson.

Vancouver, by a thorough examination of the American coast between latitude 41° and 60°, settled satisfactorily the question of a passage existing there, as had been vaguely supposed since the time of De Fuca. This proof was further strengthened by researches of Kotzebue in Kotzebue Sound, latitude 68°, in 1815. In 1825 the coast-line was completed by Captain Beechy in boats from the famous "Blossom," from Icy Cape to Return Reef, where the survey had been abandoned by Franklin.

The expeditions to this quarter of a later date were, with the exception of the United States vessel "Vincennes," Captain (now Admiral) Rodgers, all, then, in search of Sir John Franklin, and they have added little to our knowledge of Arctic geography. They were the "Herald" and "Plover" expedition, in 1848, and the "Enterprise" and "Investigator" of 1850. The former, however, reached two islands, which bear the vessels' names, north of Behring Strait, in latitude 71°. These islands are, no doubt, outlying rocks of the traditional Polar Land of Wrangel, recently reached in latitude 73° by Captain Long, of a whaling-ship.

The great feature of the voyage of the "Investigator" was actually to prove, for the first time, that a passage between the oceans really did exist. This ship found little difficulty in passing the Icy Cape of Cook, and, after coasting eastward to Bank's Land, it stood northward until caught by the winter in Mercy Bay. Not being liberated after a second and a third

winter, the ship was abandoned, and the party, travelling over the ice, were picked up by the "North Star" in Lancaster Sound, and were brought home through Baffin Bay. Thus did Captain McCluer and his people complete the circuit of America,—a feat which will probably never be repeated. And thus, after an interval of more than three and a half centuries, the vexed question which was once the commercial hope of so many nations, which had cost so many lives and so much treasure, was at last set at rest. Yet, after all that had been done, it was shown that the passage had never been and never could be available for commercial purposes.

We have not space to follow the course of the fifty-five different expeditions which have been engaged in the interesting service of exploring the north coast of Asia. The first effort was made in 1598. This was, however, merely an armed force, sent to punish the refractory Somoïedes, on the Yenisei. Twelve years later the Cossacks, in pursuit of tribute, were the first to reach the Polar Ocean at the mouth of that river; and immediately after them followed a party of merchants and hunters, who reached the Piasina River in boats, finding, in all parts, a rich harvest of furs. In 1630 the Lena was discovered by the Cossacks, and in 1638 the Indigirka. These rivers being traced to the Polar Ocean, there was brought into view the vast wealth of mammoth ivory which lies embedded in the frozen mud of the lowlands near the sea; and it was chiefly in the pursuit of this valuable commodity that the subsequent expeditions were undertaken. The Kolyma and Yana Rivers were in turn discovered, and traced to their mouths. The Bear, Liakow, and New Siberian groups of islands were explored, and, ivory being found everywhere, the activity of the Russians along these shores became very great. They soon built small vessels with which to navigate the leads of water which are, early in the summer, opened through the ice along the shore by the warm floods pouring into the sea from the great water-shed of Northern Asia, which, equalling four millions of square miles, discharges to the Polar Ocean. The dangers and privations of this navigation along these coasts were great, but the treasure obtained was likewise great, and, cape after cape being doubled, new features of the coast were

brought to notice; and while gallant officers of the government led the way, merchants and hunters followed to gather up the spoils.

But they did not pursue their explorations and traffic in their small craft alone. They soon learned to use the sledges drawn by the dogs of the native tribes inhabiting these bleak shores. With these they travelled during the winter, and with these it was that Hedenström in 1808–11 and Wrangel and Anjou in 1820–24 performed their celebrated journeys. These two latter officers, taking up their quarters, the former at Nijnei Kolymsk, near the mouth of the Kolyma, the latter at Ustryansk, at the mouth of the Yana, traversed through four successive winters the ice-fields of the Polar Ocean, extending their range of observation through more than fifty degrees of longitude. Their instructions were to survey the coasts and to seek a polar land to the north, which the natives declared was sometimes visible from the Siberian shore. But in this direction they found themselves invariably arrested in their northward course by open water, which, beginning some twenty-five miles northwest of the new Siberian Islands, extended in a southeasterly direction toward Cape Yacan. From this circumstance arose the idea that the ice-belt was a land-belt, that it could be crossed, and that a vast open sea lay within it about the North Pole. The meeting with this water was a serious disappointment to Wrangel, checking as it did his travels toward the Pole. He describes it as "illimitable to human vision."

The development of the north coast of America was begun by Samuel Hearne, a brave and enterprising man, who had been bred in the service of the Hudson Bay Company. Of the vast extent of country to the north of their trading-posts there were previously but vague conjectures.

The natives having brought in some copper ore which they had obtained, as they said, from a large river, Hearne was sent to find it, which he succeeded in doing on his third journey. Tracing the river, now known as the Coppermine, to its mouth, he was the first civilized man to look out upon the Arctic Ocean from the American side. Thus, in another quarter, did the hope of profit lead to a new field of geographical discovery.

Hearne was succeeded by Alexander Mackenzie, who dis-

covered and followed the river, since named after him, to the ocean, which he reached July 12, 1789. In the summer of 1821, Captain, afterward Sir John, Franklin descended the Coppermine, and in two frail canoes traced the coast eastward through about six degrees of longitude; but upon attempting to return by Hood River, the party met with incredible hardships, and many of them perished from cold and starvation. In 1825, Franklin and Richardson, descending the Mackenzie, traced the coast westward to Return Reef, in longitude 149° 37′ west, and east to the Coppermine, a range of about thirty-six degrees of longitude. In 1834, Captain Back descended the Great Fish River, now, however, called Back's River, to the Arctic Sea; but, being embarrassed by the ice, he was obliged to return without adding materially to the Arctic coast-lines.

In 1837, Dease and Simpson, of the Hudson Bay Company's service, traced the coast one hundred and sixty miles east of Franklin's farthest. In 1838 and 1839 these same skilful and bold explorers completed what remained of the undetermined coast of the mainland as far east as Boothia; they also discovered Victoria Land to the northward, and surveyed a considerable part of its southern coast. By these various expeditions a coast-line stretching over sixty-five degrees of longitude was added to Arctic geography, through British valor and perseverance.

In 1848, Richardson and Dr. Rae descended the Mackenzie; but as their object was a search for Sir John Franklin, they added but little to Arctic geography. The latter did more when, in 1852–53, after wintering in snow huts at Repulse Bay, he not only completed, during a long foot-journey, the survey of the hitherto untraversed coast-lines between Repulse Bay and Back's River, but actually solved the mystery of Franklin's fate, a subject to which we shall again presently allude.

Recurring again to the north and northeast, we find, in 1603, Alderman Cherrie of London sending a ship to Spitzbergen, under command of Stephen Bennet. This was the beginning of the whale fishery of that region, which, rapidly growing into importance, employed at one time four hundred sail.

The Muscovy Company from the time of Willoughby kept up a lively trade with Russia, but they had little disposition

at this time to try a passage to India by the northeast; but they were prevailed upon to send Henry Hudson by way of the North Pole. He sailed in an absurdly small vessel, the name of which is unknown, with a crew of ten men and a boy, May 1, 1608. Sighting Greenland in latitude 70°, he named a lofty snow-crowned mountain "Mount God's Mercy." Following the coast north to 73°, he there fixed the name "Hold with Hope" to a prominent headland, and then stood northeast. On the 27th of June he saw Spitzbergen, along which he coasted until he had passed, as he declared, latitude 81° 30′, seeing land still beyond; but he was probably out a degree in his reckoning, since Spitzbergen does not extend beyond 81°. Being driven back by ice and a scarcity of food, he returned home. But he set out again the following year; this time, however, to the northeast. In latitude 75° he fell in with ice which he could not penetrate. He afterward landed on Nova Zembla in latitude 71° 12′; but, being "void of hope of a northeast passage," he set sail for England.

His employers appear not to have been pleased with his conduct, for we find him, the next year, in the service of the Dutch East India Company, whose object seems now once more to have been the finding of a passage by the northeast. Hudson reached North Cape, May 19, 1609; but, without following up his instructions, if they were, as they seem likely to have been, to seek the Indies by the northeast, he at once turned his ship's prow for North America.

Where he first touched the coast of America has been a matter of much discussion, for Hudson's statements are very meagre and conflicting. He was a good seaman, but a shockingly bad narrator. He, however, entered what was afterward called Hudson River, which he was the first to ascend, with the hope of finding a passage to the north and west, upon which project, from the beginning, he had set his heart, having little faith either in the north or northeast.

The voyages of Poole, in 1610 and 1611, were unimportant, further than to show how the thirst for discovery was quickly changed to hunting for walrus. Poole reached 79° 50′. The same may be said of the two voyages of Robert Fotherly, in 1614 and 1615, who reached latitude 80°. That quarter was

now for a time wholly given over to the fishermen, who, according to Davis Barrington, made, in pursuit of gain, astonishing progress towards the Pole. Barrington was a firm believer in the existence of an open sea at the Pole, and he brought forward statements to show that four Dutch whaleships had penetrated to the parallel of 81° 30′, seven to 82°, three to 83°, six, in company, to 86°, three to 88°, two to 89°, one to 89° 30′; he even went so far as to assert that a ship had once gone two degrees beyond the Pole and another twice around it; and he exhibited a map, published under the auspices of the Royal Academy of Berlin, placing a ship at 90°. These voyages were all on the west side of Spitzbergen, as were the subsequent government expeditions of Phipps, in 1773, to 80° 48′; of Buchan and Franklin, in 1818, to 80° 32′; of Tchitschagof, in 1766, to 80° 30′; of Sabine and Clavering, in 1823, to 80° 20′; all being arrested by the ice-barrier which, more or less continuously, extends from Nova Zembla to Greenland.

Of the navigators of later times, the only one whose experience resembles that claimed by Barrington for the Dutch whalers is that of Scoresby, who reached, in 1817, latitude 81° 30′ W., in longitude 19° E., finding everywhere an open sea. It is unfortunate that duty to his employers — for he was in pursuit of whales, and not of the North Pole — should have compelled his return to the fishing-grounds about Spitzbergen and the South, along the ice-fields near which the whales are generally found.

With respect, however, to these voyages of the early Dutch whalers, details of which are given very circumstantially, not only by Barrington but by Edward Moxson, hydrographer of Charles the Second, who was in Amsterdam in 1655, and busied himself with gathering a mass of statements from sailors of every rank who had been to Spitzbergen. We may here remark that these statements were made for the most part by irresponsible persons, who, having no personal or government dignity or service to maintain, were without some of the motives to carefulness of statements. Dr. Kane discards these accounts as "apochryphal," "their imperfect nautical observations rendering wholly unreliable their assertions of lati-

tudes," and Chief Justice Charles P. Daly, President of the American Geographical Society, in his annual address of 1870, after carefully revising the different stories, arrives at this conclusion: "Those who, like myself, have passed years in the daily occupation of sifting and weighing testimony, know that little or no value whatever is to be attached to evidence of this description."

The most memorable expedition in this quarter is that of Sir Edward Parry, who, being taken by the ship "Hecla" to the west side of Spitzbergen, as far as the ice would allow, set out then over the frozen sea, on the 22d of June, 1827, with two boats, each having a crew of ten men, to reach the Pole,—an attempt which Dr. Kane justly said was "unparalleled in the history of personal adventure." The boats used were heavy, weighing each three thousand seven hundred and fifty-three pounds, the ice was bad, and their progress was necessarily slow. Heavy fogs likewise embarrassed them. On the 25th of June they were in latitude 81° 13′. Twenty-seven days afterward, July 22, they had reached 82° 43′ 5″, having thus advanced only ninety-two miles, or less than three and a half miles a day. From the 22d to the 26th they made between ten and eleven miles by their reckoning, but to their dismay they found themselves, after their four days' toil, in latitude 82° 40′ 23″, or three miles to the south of their position four days before, although they had actually travelled, as above stated, due north between ten and eleven miles. The ice had therefore drifted with the ocean current thirteen to fourteen miles, and hence they were actually going south faster than they were travelling north. In this emergency there was nothing for them to do but return.

This attempt of Parry closes the history of discovery in the quarter between Nova Zembla and Greenland, until the subject was revived again within a few years, mainly, it may be said, at the earnest instigation of the eminent geographer, Dr. Peterman of Gotha. The public has, however, been made so familiar, through recent publications, with the various voyages of the Germans, Swedes, Norwegians, and English in that direction, that it is not needful here to allude to them further than to observe that nearly the whole line of the ice-barrier

from Greenland to Nova Zembla has been retraced without the discovery of a practicable opening; at least, if an opening was found, it was not followed. But while failing in this, our knowledge of Spitzbergen has been greatly extended, new islands have been discovered, great additions have been made to the surveys of Scoresby, Sabine, and Clavering on the Greenland coast, and in hydrography and natural history most important results have been achieved.

Leaving this quarter, we come once more to the northwest, where we find Waymouth, in 1602, following up the track of Davis, and struggling against evil fortune and a mutinous crew. He was employed by the old Muscovy Company and the newly formed company of the Levant, and, as all his predecessors had done before him, sadly disappointed his patrons. The only value of his voyage was to point the way for Hudson, in his fourth voyage, into the great bay which bears his name.

This expedition of Hudson was a private one, made in the ship "Discovery," of fifty-five tons. He sailed from the Thames, April 17, 1610, touched at Iceland, and on the 15th of June "raysed the Desolations," which is Greenland. At the end of the month he was off Resolution Island at the mouth of Frobisher Strait. Passing to the south of this, he found himself at the entrance of a great strait, into which, much elated, he pushed his way, notwithstanding the ice which constantly endangered his vessel. His people became alarmed, and then mutinous: "Some were of one minde, and some of another; some wishing themselves home, and some not caring where, so they were out of the ice." Necessity, however, compelled them all to work in order to free the ship. They were then off some sheltering islands which were named the "Isles of God's Mercy," and about a hundred leagues up the strait in latitude 62° 9'. Beyond to the westward Hudson saw a vast sheet of water, which he had no doubt was a portion of the great Pacific Ocean. One can imagine his feelings of exultation at having finally, as he thought, accomplished what had been so often tried before in vain.

Hudson now began to look about him for a more genial climate wherein to winter, and, after wandering about "in a labyrinth without end" for three months, the ship was at

length frozen fast, exactly where is not known, and the winter was passed most miserably. When the ship was again afloat, Hudson was treacherously seized, thrust into an open boat with eight sick men, and set adrift, never to be heard of more. Thus did he find a grave in the magnificent inland sea which he had been the first to navigate; and thus perished one of the ablest, most industrious, and most daring seamen of his own or any other time.

In 1612, Thomas Button followed the track of Hudson, and, by his discoveries in Hudson Bay, laid the foundations of the afterward famous Hudson Bay Company. The quaint names still retained on the maps of that quarter, such as "Queen Anne's Forelands," "Cary's-Swan's-Nest," "Hopes Checked," all attest the extent of his voyage. This last name clearly indicates the commander's disappointment when it was discovered that the great sea of Hudson was bounded by land to the west, and that it was no part of the Pacific Ocean.

During the same year, James Hall, a Dane, made another attempt; but no importance is attached to it further than it marks a peculiar era in navigation. Up to that time, while latitude was obtained with considerable accuracy, of longitude there was nothing approaching to it; and nothing was known of a vessel's easting and westing, except such as was obtained by the uncertain method of dead-reckoning. Hence the maps of the period present a strange crossing of coast-lines and confusion of distances.

William Baffin accompanied Hall, and, for the first time of which we have any record, practised a method of his own invention for determining the longitude at sea by an observation of the heavenly bodies.

Baffin was the next to seek China and India by the northwest, although his ship (the "Discovery" of Hudson's voyage) was actually under command of Robert Bylot, who had been already three times to the Arctic seas. The upper parts of Hudson Bay were explored; but there was no passage to be found that way. They sailed again together in the same small ship the following year; this time, however, following the Greenland coast. About the middle of May, they were off the Sanderson's Hope of Davis. Continuing thence north-

ward, they encountered ice June 19, in latitude 74° 4′. This was in what is now Melville Bay.

A fruitless effort was made by Baffin to work his way to the westward; but, unable to get disentangled from the ice, he took shelter behind some islands (probably the Duck Islands) in latitude 73° 45′. The ice melting very fast, they again took to sea June 28, and reached open water July 1, in latitude 75° 40′, which "anew revived the hope of a passage." On the day following they passed, in latitude 76° 35′, a headland, which they called Cape Dudley Diggs. A few leagues beyond, they opened a sound which was named Wolstenholme; then they passed and named the Cary Islands and Whale Sound and Hakluyt Island, and on the 8th of July discovered a sound opening north, which was called Sir Thomas Smith's Sound, and which, in later times, has become famous as one of the favorite routes to the North Pole.

With a fair wind they then stood southwest until they came to another sound, which was named after Alderman Jones of London. Two days later, July 12, another was discovered in latitude 74° 20′, to which was given the name of Sir James Lancaster.

Through neither of these sounds was there any passage to be found, on account of the ice; and, from this time forward, as they went south, remarks Baffin, "wee had a ledge of yce between the shoore and us." Following the shore to latitude 65° 40′, and seeing that "hope of passage could be none," and "seeing that wee had made an end of our discovery," Baffin bore up for Greenland, where, in Cockin's Sound of Hall, he anchored and found "some refreshing for the men" in the shape of scurvy grass (*Cochlearia*), of which they made plentiful use, and, "with the blessing of God," were restored to health, after their hard and most wonderful voyage; for, whether we consider the smallness of the vessel (only fifty-five tons), the dangerous character of the sea which they traversed, the vigor and boldness with which the voyage was executed, or the magnitude of the discoveries made, there is no other expedition to compare with it in the whole history of Arctic discovery.

Following Baffin were several expeditions which we need

only barely mention: as that of Jans Munk, a Dane, who entered Hudson Strait, but did nothing more than change some names given to geographical positions by previous discoverers; that of the eccentric Captain Luke Fox, or "Northwest Fox," as he called himself, in 1631, who circumnavigated Hudson Bay, and, after reaching "Fox, his Farthest," had to confess to the same failure as his predecessors concerning the passage; and of Captain James, who explored, the same year, the bottom of Hudson Bay, to which he gave his name, and from which he, of course, found no western outlet.

From this time forward nothing was attempted until 1719, when Knight, Barlow, and Vaughan sailed to Chesterfield Inlet, confident of there finding a passage. And there they all perished, martyrs to a cause in which they had unbounded faith, as was abundantly shown by their taking with them strong iron-bound chests in which to secure the treasure they were to find in India. In 1741 the Hudson Bay Company equipped an expedition under Middleton and Moore, and another under Moore and Smith, in 1746, with like results as to the passage. The same was true also of Pickersgill and Young, who, in 1776 and 1777, were sent by the British government, in the "Lion," to co-operate with Captain Cook, who, as already stated, was to meet them from Behring Strait.

The subject was allowed once more to rest for a time until, a fresh zeal having been manifested for Arctic discovery, Sir John Ross was despatched, in 1818, in two ships, the "Alexander" and "Isabella," to find the passage through Lancaster Sound; but he only followed the track of Baffin, and, being convinced that the sound was crossed by a range of mountains which he named after one Croker, he returned home with the report that there was no passage that way. Captain, afterward Sir Edward, Parry, who commanded the second vessel, doubting the accuracy of his superior's statements, was sent the next year in command of another expedition, comprising the two ships "Hecla" and "Griper."

Parry proved the "Croker Mountains" to be another Arctic fable, and, sailing westward into Lancaster Sound through more than thirty degrees of longitude, finally crossed the one hundred and tenth meridian, and thus won a government prize for

himself and crew of five thousand pounds, which had been offered by the British government to any one who should reach that degree, with fifteen thousand more if a through passage was made. But the winter had now set in, and, a harbor being found on Melville Island, the ships were soon frozen fast; and it became the province of Parry, in all respects the most skilful of all Arctic commanders, for the first time to prove that, with proper care and discipline, an Arctic winter may be passed without loss of health or serious lack of comfort. The following summer found every passage so completely closed with ice that they could make no further progress westward.

Parry's next attempt was through Hudson Bay, in the ships "Fury" and "Hecla," in 1821; and his third, in 1824, through Lancaster Sound, and then south through Prince Regent's Inlet. In these three voyages Parry greatly extended geographical knowledge, but there was no passage found, or any great promise of one.

In 1825, Captain G. F. Lyon, who had been with Parry, made another attempt through Hudson's Bay to follow up Rowes Welcome to the west of Southampton Island, and through the Fury and Hecla Straits of Parry; but a violent gale while among the ice so crippled his ship, the "Griper," that the expedition had to be abandoned. A similar attempt to the east of Southampton Island, through the Frozen Strait, was made by Captain Back, in the "Terror," with equally bad fortune, in 1836.

Sir John Ross made his second voyage in 1829, — a voyage which is chiefly memorable from the fact that it is the first time that steam was applied to Arctic navigation. His vessel, the "Victory," was a paddle-wheel steamer, and although unfit under ordinary circumstances for ice navigation, yet he reached Boothia, the northern extremity of the continent, so named by him after Sir Felix Boothia, his patron. The "Victory" was locked in the ice, and was never liberated; and the party, taking to their boats, reached Baffin Bay after encountering great hardships, where they were picked up by a whale-ship.

The subject was now suffered to rest again until Sir James Ross returned from his brilliant voyage in the Antarctic Sea,

when Sir John Barron and Colonel Sabine, backed by the powerful influence of the Royal Society, prevailed upon the government to use the same two vessels, the "Erebus" of three hundred and seventy-nine tons, and the "Terror" of three hundred and twenty-six tons (which, being already completely equipped for ice navigation, were therefore good for little else), to seek once more the northwest passage.

Sir John Franklin had been for many years one of the most enthusiastic advocates of Arctic discovery. "You know," he wrote a friend in 1836, "that no service is nearer my heart than the completion of the survey of the north coast of America and the accomplishment of a northwest passage." He was now, however, well advanced in years, and was, by many persons, thought to be too old to withstand the fatigues of such an undertaking. Captain F. R. M. Crozier, who had just returned with Ross from the south, was thought by these to be the right man; but the command was offered to Franklin, with Crozier as second. The offer was accepted, and the two vessels, which had been to latitude 78° south, were thoroughly equipped for a northern voyage of three years, and left the Thames, May 26, 1845. They were last seen by a whaler, moored to an iceberg in Melville Bay, waiting for the pack to open.

The third winter of their absence had nearly passed before there was any great anxiety felt for their safety. That they had succeeded, and would be heard from in the Pacific Ocean, was generally believed. But vessels returning from that quarter without tidings of them at length excited alarm, and three expeditions — one overland by the Mackenzie River, another by Behring Strait (both already referred to), and a third, under Sir James Ross, to Lancaster Sound — were despatched, in the spring of 1848, to seek them. No traces of them being discovered, the attempt was renewed in 1850, with increased force of men and ships, the squadron operating on the Baffin Bay side alone numbering eight English ships, to which must be added the two vessels "Advance" and "Rescue" of the United States squadron, furnished by the liberality of Henry Grinnell and the late George Peabody. These were supported by supply-ships with additional stores during the next three

years. Although this extended search yielded only unsatisfactory results as to the fate of the missing ships, the great congeries of islands lying to the north of America was thoroughly explored by foot parties, mile by mile, and while but few traces of Franklin's party were discovered, thousands of miles of new coast-line were added to the charts. The few traces were found at Beechy Island and Cape Riley, on the north side of Lancaster Sound, in 1850, and the conclusion formed was that the "Erebus" and "Terror" had there passed the first winter.

In 1853 five of the vessels of the search squadron were left in the ice, none of which were afterward heard of, except the "Resolute," and the search was abandoned as hopeless.

Then came the news that Dr. Rae had found traces of the party on Montreal Island, at the mouth of Back's River. This once more aroused the devoted Lady Franklin to action, and a vessel, the steamer "Fox," under Captain McClintock, was equipped, mostly at private expense, and sent to seek further traces of the missing expedition. Many relics and a single brief record were discovered. This last told a mournful tale. The ships had wintered at Beechy Island in 1845–46, had then endeavored to make their way north through Wellington Channel, failing in which they had returned and tried the old passage of Parry, west through Melville Sound, when, again failing, they sought the American coast, expecting to reach Dean and Simpson's Strait, and then along a shore which Franklin had himself once followed in 1825, make their way to Behring Strait and the Pacific Ocean. How near they came to the realization of their hopes will best be appreciated when it is known that they were actually not fifty miles from the strait where Dean and Simpson had sailed to and fro in boats in 1837. Thus had they discovered that a passage did actually exist between the Atlantic and Pacific Oceans; but they were doomed not to pass through it. The winter caught them when beset among the ice, fifteen miles west of King William's Land, and there another dreary Arctic night passed over them. This second night told hard on all the party, and Sir John Franklin was one of the earliest victims; he died on board his ship in the spring of 1847, nearly a year before the most serious troubles of the crews were encountered.

High must have been their hopes as the summer brought its warmth, but sadder their hearts when winter came again and found them still embedded in the same "thick-ribbed ice." Several of the party died during this third winter of their imprisonment; and now, without provisions enough left to carry them on their voyage, even if the coming summer should liberate their vessels, the survivors set out in the early spring of 1848 to drag their boats to Back's River. A few of them reached it, only there to die on an island at its mouth. The rest perished by the way. The late Captain C. F. Hall has since visited this land, and Esquimaux have brought other relics to the whale-ships at Repulse Bay; but this is substantially all we know.

And thus began and ended one of the most remarkable events of modern times,— remarkable for the world-wide sympathy it created, and the persistent effort that was made, long after all hope was gone that any of the party were alive, to resolve the fate of men whom adversity had elevated into heroes and martyrs in the public eye.

We have now traced the progress of Arctic exploration and discovery around the entire circuit of the Arctic Ocean, with the exception of a single break between the 20th and 90th meridian of west longitude, within which lies Greenland and Grinnell Land. The northern coasts of these have not yet been explored. Greenland has been traced on its eastern side to latitude 78°, and on its western to above 82°; but no one has yet been able to determine where the land and water meet in the seven or eight hundred miles which lie between these extreme points of exploration. Grinnell Land has been followed by the eye to above 83°; but of the northern and western aspects of this land, the most northern, so far as yet known, upon the globe, we are ignorant. That there is a considerable body of land yet unexplored to the north of Behring Strait there can be no doubt, and there is probably as little doubt that there are yet unexplored islands of the Spitzbergen group to the northeast. But Greenland and Grinnell Land are on the circle we have followed, in the track of a host of expeditions; and we may hope that their shores may erelong be laid down upon the chart, and the circle of discovery made complete.

This can probably only be done by way of Smith Sound, the progress of discovery through which has all been within these past twenty years. Baffin, its discoverer, in 1616, did not attempt to enter it; and Ross, in 1818, did nothing more than fix the names of his two ships to the capes which bound it. The first to pass these capes was Captain Inglefield, in 1852, during his famous summer search for Sir John Franklin. This spirited and fearless navigator, pushing his way in the teeth of a heavy gale, with ice all around him, reached latitude 78° 40′, and saw the shores expanding to right and left, but could not land, and was driven south.

In 1853, Dr. E. K. Kane, acting under the belief that Franklin, failing to find a passage beyond Beechy Island, had returned through Lancaster Sound, and gone up Smith Sound, after passing Cape Alexander, and depositing a boat and depot of stores on the mainland at a place which he named Lifeboat Cove, steered for the west coast, but was headed off by heavy pack-ice. He had only a little brigantine of one hundred and forty-four tons' burden, and, unable to bore the pack, returned to the Greenland coast, which he followed until the ice shut him in at Rensselaer Harbor, in latitude 78° 37′. Here, two winters being passed, and fuel and provisions being both exhausted, the vessel was abandoned; and the party, taking to their boats, after a toilsome journey of eighty days, reached the Danish-Esquimaux colony of Upernavik.

The geographical results of this voyage were important. Instead of expanding into the Polar Basin, as Inglefield thought, a great body of land was found to lie directly across it, a little below the parallel of 80°, which was discovered, and its southern coast-line surveyed, by Dr. Hayes, a member of the expedition. It was thus shown that Smith Sound expanded from its entrance, not into the Polar Sea, but into a middle basin, the axis of which runs nearly northeast and southwest. The Greenland shore of this basin Kane traced in person; then Mr. Bonsall discovered that it terminated to the northeast in an immense glacier, beyond which Mr. Morton afterward discovered and explored, nearly to latitude 81°, the coasts of the "Land of Washington," which, by projecting to the west, again narrowed this channel to the Polar Sea to about

the same dimensions as the Smith Sound entrance. The water beyond the new narrowing of this passage Kane named Kennedy Channel, and the land to the west of it Grinnell Land.

All the explorations of this voyage were made by sledge parties, — the sledges, carrying stores and camp equipments, being drawn by men or dogs, — in the spring or late in the autumn, after the sea was firmly frozen over. It was in this manner that Morton made the journey which was brought to an end by open water making from the northward, thus adding fresh proof in favor of the Russian theory of an open sea about the Pole.

In 1860, Dr. Hayes followed on the track of his former commander, in a schooner of one hundred and thirty-three tons' burden. He was unable, on account of heavy ice, to reach the west coast, and, like Kane, was driven by the pack and a heavy gale upon the Greenland side, and forced into winter harbor September 8, in latitude 78° 17′, — a position which, while it gave greater assurance of release the following year, was not so favorable for sledge-travelling as were Dr. Kane's quarters at Rensselaer Harbor, since Port Foulke (as he named his place of refuge) was some eighty miles to the south and west of Kane's position. Dr. Hayes began early in the spring, when the temperature encountered in the field was often fifty degrees below zero, and on one occasion sixty-nine degrees, to lay out depots of supplies, and, early in April, set out to cross the sound.

The distance from shore to shore, being about ninety miles as the crow flies, should, under favorable circumstances, have been made in a few days with his dog-sledges: but owing to the rough character of the ice, which was often piled up in ridges fifty and sixty feet high, upwards of thirty days were consumed. The boat with which Dr. Hayes expected to traverse the polar sea could not be transported across the sound; and that part of his plan, after seventeen days' trial, was abandoned. The boat was sent back, and Dr. Hayes continued his journey with two dog-sledges and three companions.

The opposite shore being reached, the travellers traced the coast of Grinnell Land to about latitude 82° 45′. Their highest position, determined by astronomical observation taken on land, was latitude 81° 37′. Beyond this they travelled from

fifteen or twenty miles, as estimated, over the ice, until they were interrupted, as Dr. Kane's party had been in 1854, on the opposite side of the channel, by open water making from the northward, which compelled their return. On the homeward journey it was discovered that Grinnell Land was cut off from the Ellesmere Land of Inglefield by a sound apparently running parallel with Jones Sound.

This journey across Smith Sound, in going and coming, occupied sixty days; and the actual distance travelled, in winding through the intricate passages among the hummocked ice, and in repeatedly returning upon the track to bring up portions of the divided cargo, was estimated at over thirteen hundred miles.

The schooner was liberated, July 10, 1861, after a winter passed without sickness, and with no lack of fresh food (reindeer being especially abundant); but the schooner being severely damaged the previous season and totally unfit for further encounters with the ice, it was determined to return home and refit with the expectation of going back the following year with another vessel having steam-power. The late civil war prevented this scheme from being carried into execution.

In October, 1869, Captain C. F. Hall, upon returning from his long residence among the Esquimaux of Hudson Bay, where he had been seeking for further traces of Sir John Franklin's party, conceived the idea of reaching the North Pole through Smith Sound with a steamer; and, familiar as he was with the experience of his predecessors in that quarter, he clearly saw that steam was absolutely necessary.

An expedition being authorized by an Act of Congress, the "Polaris" was fitted for the service in the most elaborate manner by the Navy Department. Nothing was omitted which experience suggested; and probably no vessel ever sailed for the Arctic seas better equipped. She left New York, June 29, 1871, and upon reaching the appointed rendezvous at Godhavn, Disco Island, North Greenland, was joined by the United States steamer "Congress," acting as a supply-ship. Receiving her final supply of coals and other stores, she sailed, August 17, for Upernavik, to procure dogs and an interpreter. Thence she went to Tessuissak, a little hunting-station farther up the

coast, in latitude 73° 24′, for more dogs; and then, August 24, pushed north into Melville Bay, where vessels have usually been embarrassed by the ice, and where Captain McClintock, in the steamer "Fox," was helplessly frozen fast, August 26, 1857.

From Tessuissak, Captain Hall dated his last despatches. After this the details we have of the expedition are meagre. We have only a short despatch to the Secretary of the Navy, found among Captain Hall's private papers, a copy of which was placed in a cairn at latitude 82° 3′ N.; the evidence taken before the board of examiners in Washington of what is known as Captain Tyson's party; and the newspaper reports of the statements of Captain Buddington, Dr. Bessels, and others. These are, however, sufficient to enable us to make up a brief general outline of the voyage.

The "Polaris" appears to have passed through Melville Bay without obstruction from the ice, and was off Cape York August 26. The north water, which is usually crossed by a moving pack between Whale and Jones Sounds, appears to have been equally free. Smith Sound was entered soon afterward on the east side, and no serious embarrassment from ice, such as beset the three expeditions which had been there before, was encountered; nothing, indeed, interrupted the fortunate course of the voyage to Cape Frazer, the entering cape on the Grinnell Land side of Kennedy Channel. Here they examined a small bay, which Dr. Hayes had reported as likely to furnish a harbor, but it proved to be too shallow.

Captain Hall then pushing ahead, and leaving behind him the point which Dr. Kane's party had reached on the right, and then Dr. Hayes's farthest on the left, entered another channel, which he named Robeson Strait, in honor of the Secretary of the Navy. It was in this channel that open water had been previously seen, and the conclusion reached, both by Kane and Hayes, that it was an open sea. It proved to be only a somewhat abrupt expansion of Kennedy Channel. On the 30th of August, only six days from the time of leaving Tessuissak, the "Polaris" was in latitude 82° 16′ N., nearer to the North Pole by forty-six miles than any ship had ever been before, according to any well-authenticated record. Here,

after a most extraordinary experience of good fortune, and one wholly unparalleled in Arctic navigation, moving ice was for the first time encountered, and Captain Hall made the land on the east side, and examined the coast for a harbor, without, however, finding one. Upon trying to reach the west coast the "Polaris" became beset in the pack, and was not liberated until the 3d of September, during which time great alarm was felt on board, and provisions were placed on the ice, in order that the party might be ready for the worst. Being liberated, however, without serious damage, the "Polaris" now steamed into a small sheltered cove protected by a stranded iceberg in latitude 81° 38′, longitude 61° 44′ N. This was called "Thank God Harbor," and here they wintered. On the 10th of October, Captain Hall set out on a sledge journey northward, and returned after making about fifty miles. Soon afterward he was taken sick and died, and the command devolved on Captain Buddington. The winter passed after the usual manner of recent Arctic expeditions. Game was abundant. Some journeys were undertaken in the spring and summer, but no greater northing was made than that accomplished with the vessel the previous summer. The highest latitude attained on land was 82° 9′, the highest point of land ever reached. Early in June the "Polaris" was released from winter harbor, and on the 12th of August they set out for home. The next day she was beset in the pack, and was in great jeopardy for some hours. On the 16th she made fast to a floe in latitude 80° 2′, and helplessly drifted with it south to Littleton Island, on the Greenland side of Smith Sound, and near its mouth, and near where Dr. Hayes had wintered in 1860. Here on the night of October 15, during a violent gale of wind accompanied with snow, the ship was severely nipped by the ice, which was driven under her, forcing her over on her beam ends. Preparations were hastily made for abandoning her. Provisions and clothes were thrown out on the floes; the boats were in like manner secured; and, indeed, everything possible was hurriedly passed overboard. The ice suddenly opening, the vessel righted, and the hawsers were parted by the force of the gale. At this juncture there were nineteen persons on the floe. The two parties never

again met, and the public is already well acquainted with the terrible sufferings and privations of the party on the ice, without other shelter than snow huts, and without fire, and often without food, in their unparalleled drift of fifteen hundred miles before they were picked up by a passing vessel. It appears from newspaper reports that the "Polaris," being in a sinking condition when she righted after the "nip," was run ashore on a beach near Dr. Kane's "Lifeboat Cove." There the shipwrecked crew built a house out of the fragments of the wreck, and, after passing the winter, they constructed boats and went south, hoping to intercept the whale-ships which annually arrive about Cape York in June. In this purpose they were successful.

Thus, after the most extraordinary series of successes, misfortunes, and privations, all were in the end saved, and returned to their homes, except the stout-hearted commander of the expedition.

With respect to the scientific achievements of the voyage, we must await official reports. Enough, however, is known of the geographical results to warrant us in saying that considerable additions have been made to the Arctic coast-lines. From Kane's farthest, the land, with several deep indentations, has been traced northward considerably more than a degree in latitude, and probably nearly a degree has been added on the west side above Cape Union, the last point seen by Dr. Hayes.

Here we leave the subject, at least for the present. Perhaps at some future time we may resume it. We have our own views respecting the probabilities of there being an open sea about the North Pole, and of the comparative merits of each of the passages leading to it; but space does not now admit of their discussion. One thing we may however say,—there should be at least two vessels in any expedition which may be again undertaken into these dangerous seas, with two competent commanders, in order that the loss of one ship or one commander need not involve the loss of everything, as in the unfortunate Polaris expedition, the fate of which will, we much fear, postpone, by its discouraging influence, for some time to come, all efforts to accomplish a much needed exploration.

I. I. HAYES.

BAFFIN'S BAY.

NORTH-WEST PASSAGE.

The following extracts from a letter written by an officer on the expedition under Captain Ross, communicates many new facts, and confirms our opinion, long since expressed, that nothing has been ascertained as to the practicability or impracticability of passing into the Pacific Ocean from the North Atlantic.

The ordinary weather of the Arctic regions, generally speaking, is mild, but foggy, and the atmosphere mostly loaded with clouds, or some kind of vapour ;—when I say *mild*, I mean that there is little or no wind, and that Fahrenheit's thermometer ranges from 32° to 40° in

the shade ; once, and I believe but once, it was down to 24°, but very often above 40°. I am now speaking of the month of August, and I may add that September brought with it no diminution of temperature, —it is true we were then ranging down the western coast of Baffin's Bay to the southward ; but we have learned from experience, that in these regions one does not increase the cold by increasing the latitude.

About the 9th of August we got so far up the coast of Greenland as to recognise the Cape Dudley Digges of Baffin, but still hampered with the ice. When near this Cape, we very unexpectedly observed something like human beings moving toward us on the ice, which separated us from the shore about seven or eight miles. On a nearer approach we perceived that they were actually men, sitting on low sledges, drawn by five or six dogs in each. When within a mile or less of the ships, they stopped short, but hallooed and shouted at a great rate. Just at this time some signals were making between the ships, which probably alarmed them, for they suddenly wheeled round, and set off again toward the shore in full gallop, at a speed which we supposed to be at least equal to that of our mail-coaches ; of course we soon lost sight of them behind the hummocks of ice. Every body regretted their sudden disappearance ; and in order if possible to bring them back, and to explain our friendly intentions, Captain Ross caused a white flag to be hoisted on a hillock of ice, on which was painted a hand holding a green branch of a tree—a colour, by the way, and an object, not very common in this part of the world ; there were also left on the ice some presents, placed on a stool, and an Esquimaux dog with beads about his neck ; every thing, however, remained untouched on our return from an attempt to push to the northward through the ice, and the poor dog was lying down on the very spot where we left him. On the third day the natives were again observed at a distance, coming toward us ; they now approached within a few hundred yards of the ship before they stopped, but perceiving that they had no inclination to come nearer, Jack Saccheus, the Esquimaux, whom you saw with his canoe on the Thames, volunteered to go out to them. They immediately began to talk and bawl in a language which Jack at first did not understand. but by a little attention he discovered that the language they made use of was that of the southern Esquimaux, somewhat different in the pronunciation, as well as in many of the words themselves, but he soon found that he could make out their meaning. The questions they put to him, with great eagerness, were to the following purpose :— Who are ye ?—What are ye ?— Where do you come from ?—Are you come from the moon ?—What are those two great birds ?—Jack told them in reply, that he was a man like them ;—that he had a father and mother ;—that he was made of flesh and bones, and that he wore clothes ;—that the two great things which they called birds, were houses to live in. On hearing this, they all called out, No, no, we saw them flap their wings, and they were sure that they were *Angekuk*, or evil spirits, come to destroy them,—at the same time one of them pulled from his boot a sort of rude knife, which he held out in a threatening posture, and said he would kill him. Jack threw them a shirt across the canal, that they might be convinced he carried about with him substantial matters, and not such as spirits could carry ; they asked him what skin it was made of? Thus, by degrees, they conversed together ; and when Jack told them any thing that pleased them, or to which they gave their

assent, it was indicated by pulling their noses. In a short time they had got into familiar conversation; and Jack having learned that there was plenty of water to the north, came running to the ship for a plank to enable them to cross. Captain Ross and Lieutenant Parry now went to meet them. On approaching the ship, their astonishment was unbounded,—every object drew from them an ejaculation of *hai-ya!* accompanied with immoderate bursts of laughter. They laid hold of the ice-anchors, the smith's anvil, the large spars of wood, as if they could carry them off, and expressed the utmost astonishment apparently at their unexpected weight; they seemed like men who distrusted the sense of sight, and could not satisfy themselves of the reality of objects, until they had grasped them; to view themselves in a looking-glass, but more especially in a concave mirror, made them almost frantic with joy and wonder, and drew forth such bursts of laughter, and exclamations of surprise, as were never heard before. The masts of the ship, and a top-mast on deck, attracted their most profound attention, which is not at all surprising, especially when they were assured that they were pieces of wood. A man who never saw a tree, nor even a shrub beyond a birch or willow twig of the thickness of a crow's quill, must necessarily be incredulous that the mast of a ship could be made of the same material. The two substances with which they seemed to be most familiar, were *skin* and *bone;* and they always inquired of what *skin* our jackets, trowsers, shirts, hats, &c. were made, and of what *bone* were our buttons, and most other solid substances. Glass of all kinds they took naturally enough for ice.

We gave them some bread, but they spat it out; some rum, but they could not bear it; and we learned from Jack that they lived entirely on animal food; mostly on the flesh of seals, sea-unicorns, bears, foxes, and birds; and when all these failed them, that they eat their dogs. The bones of the animals which serve them for food, supply them also with fuel; and a very fine soft moss, with long fibrous roots, when dipped in fish oil, is used by them as candles or torches. This moss grows in great plenty, and very luxuriant. The bones also serve them to make their sledges, which are fastened together with thongs of skins. Their knives are certainly the rudest instruments of the kind in the whole world: they are nothing more than a flattened piece of iron, like a bit of a hoop, passed longitudinally in the groove of a fish's bone, and extending beyond it, at one end, about an inch; and they are thus fixed, without the faculty of opening or shutting. Mr. Sabine took great pains, through the medium of Jack's interpretation, to learn where they got the iron, and how they worked it; the result of which was, that it was hewn by a sharp stone, from a large mass found in the mountains at no great distance from the spot where we were; of course it was concluded that it must be *native* iron; and supposing it to have been recently discovered, this circumstance may, in some measure, account for the rudeness of their manufacture, as the stitching of their clothes and boots, and the putting together of their sledges, were by no means contemptible performances. They described two pieces of iron from which they derived their supply: and each of which, by their account, might be equal to a cube of two feet. They called it *sowie*, and the place where it was found Sowielick, the former of which Jack observed to be the name given to iron by the southern Esquimaux. We now find, since our arrival, that this iron turns out to be meteoric, and

that it contains the usual proportion of Nickel.

It is very remarkable, that this new tribe of Esquimaux (which I find by the news-papers are ridiculously called a New Nation) have no boats, nor any means of going upon the water, except on the ice, though the greater part of their subsistence is derived from that element; but we understood that they managed matters very well without them. The way in which they proceed to catch seals, is by going to the openings or chasms in the ice, lying down, and imitating the cry of a young seal, when the old ones immediately peep up; and while they are endeavouring to scramble upon the ice, they are knocked on the head by the hunters, or run through with a kind of spear made of bone. I remember reading of a similar practice among the southern Esquimaux. They gave us some specimens of this Seal music, and also of their songs, which were any thing but music, and accompanied with the most ridiculous gestures and grimaces. On the murging of these notes in the ice, they also watch for the rising of the sea-unicorns to blow, which it seems they are frequently obliged to do. The flesh of this animal dried is a considerable article of their winter food. Though afraid at first to go into the boat, they appeared soon to be sensible of the advantages of being able to float on the water, and one of them showed a great desire to get possession of Jack's canoe, after he had been told the use of it, of which he was before perfectly ignorant.

Their winter habitations were to the northward, and that they came down south to pass the summer, where there is more ice and snow, and consequently more food to be had than in the former situation,—a seeming paradox, the truth of which, however, was completely verified by us. On the very northern summit of Baffin's Bay, which could not be less than 78°, there was much less snow on the land, and much less ice on the water, than we had hitherto met with in any part of Davis's Straits, and these people had told us that we should find it so; well, therefore, might our new friends deem this the happy country, and conclude that all the world to the south of them was ice and snow! And if good looks and a cheerful demeanour may be considered as indications of happiness, they were certainly in the enjoyment of it; they were all in excellent keeping, with faces as round as the full moon, and exceedingly like the people of Kamschatka and the Aleutian Islands. Their dogs, too, were in excellent condition: they have long bushy tails like the fox, a rough straggling mane round the neck, and have a general resemblance to the wolf: they seem very quiet, and never bark; but a young dog, since its arrival at Deptford, has learned to bark as loud and long as the noisiest dog in the place.

A breeze of wind, and an open sea, were occurrences of too rare and important a nature to be neglected, and we accordingly availed ourselves of them, and steered to the northward, leaving these children of nature, and, as we deemed them, of misery, without the smallest reluctance; for, in fact, they at last became bold and troublesome, and attempted to steal every thing they could lay hands on. We had not proceeded far, when a singular appearance, of a deep crimson colour, on the surface of the snow, by the sides of the hills, attracted our attention, and the more so when we found it continuing in patches, for an extent of ten or twelve miles. Having landed near to one of the patches, we collected a considerable quantity of it, melted the snow, and preserved the colouring matter which it deposited. Various conjec-

tures were hazarded as to this curious matter, and all the three kingdoms of nature were put in requisition. Many a page was turned over in our books of knowledge, with which the Admiralty had liberally supplied us; and, at length, some one, Captain Sabine, I believe, found, in Rees' Cyclopedia, the very thing we were in search of, under the word "Snow;" but the account there given left us just where we started. Saussure, it told us, found snow of a bright red colour, on the Alps, and considered the colouring matter as the farina of some plant, while M. Ramond, who found the same kind of snow on the Pyrenees, concluded it to be of mineral origin; and we now learn since our return, that ours at least is neither the one nor the other, but an animal substance, the excrement of birds, as Mr. Brande supposes, from the quantity of Uric acid* it is found to contain; and I have no doubt but he is right, for in the very neighbourhood of it were such myriads of birds, of the Auk kind (Alea Alce,) that when they rose up from the ice or the snow, they literally darkened the sky; and close to the spot where we landed, was one of their breeding places. If I say that they sometimes appeared in hundreds of thousands, or even millions, it will not give you an adequate idea of their numbers. We shot as many as we pleased, and fed the whole ship's company with them, being very palatable food, free from all fishy taste or smell, and they made most excellent soup. We used to bring down from twenty to thirty at a single shot; and as we had reason to believe that these vast multitudes were chiefly confined to the upper part of Baffin's Bay, we laid in a stock for future supply, by placing them in casks, with layers of pounded ice between them.

Having passed Cape Dudley Digges, we opened out a sound or strait, which was considered to be that of Baffin, named "Wolstenholm's Sound;" but the shallowness of the water, and the ice within it, gave no hopes of a passage that way, and we accordingly passed it at the distance of 15 or 20 miles. The "Whale Sound" of Baffin was not more promising; but it appeared to many very desirable that we should have approached somewhat nearer to "Sir Thomas Smith's Sound," at the north-western extremity of the bay, which presented a very wide opening; but we passed it at the distance of 50 or 60 miles. The land now stretched S.W., and we ran parallel with it, but at so considerable a distance, that it was only to be seen at intervals, when the weather cleared up, which it did, sufficiently to let us see another opening, which we were willing to recognize as "Alderman Jones' Sound" of Baffin. The weather was in general mild and exceedingly pleasant, and the sea in the whole of the upper part of the bay almost wholly free from ice, excepting now and then a solitary ice-berg, floating, or aground.

The writer of the letter goes on to state, more at length than it is necessary for us to quote, that on the 30th of August, in latitude 74½, or thereabouts, the expedition suddenly deepened its water from 150 or 160 to 750 fathoms, and increased its temperament from 32° to 36°. They were off "Sir James Lancaster's Sound," which is at least 50

* Uric acid, or lithic acid, was discovered by Scheele in 1776. It is the most common constituent of urinary calculi, and exists in human urine. That species of calculus which resembles wood in its colour and appearance is composed entirely of this substance. In this state it has a brownish colour, it is hard, and crystallized in small cakes. It has neither taste nor smell, *is insoluble in cold water, but soluble in 360 parts of boiling water.* The solution reddens vegetable blues, especially the tincture of turnsol. A great part of the acid precipitates again, as the water cools. It combines readily with alkalies and earths, but the compound is decomposed by every other acid.—*Dict. of Arts and Sciences.*

miles in width from the north to the south foreland. This inspired great hopes, and they thought the *North-west passage* found; but after running up about ten leagues, the water being entirely free from ice, the Isabella saw land at the bottom of the inlet, while the ships were yet in a depth of 650 fathoms.

"On passing near the southern point of Lancaster Sound, (says our authority) the depth of water had increased to upwards of 1000 fathoms. Close to this point we landed on a fine sloping sandy beach, at the bottom of a little bay, into which a river of running water was falling, whose width might be from 50 to 60 yards, and the water above knee deep. The flat ground through which it ran was free from ice, and appeared to be covered with a tolerably good soil, in which were growing a variety of plants. On the banks were found a piece of a fir-tree, or branch, about five inches in diameter, and a piece of birch bark. We went through the ceremony of taking possession of this land in the name of His Majesty, which, I fear, is only putting 'a barren sceptre in his hand,' though of all the places we had yet seen since we crossed the Arctic circle, this is by far the most inviting; and, indeed, were it not for the high peaked mountains, partially covered with snow, which bound the valley on each side, we could not possibly have supposed ourselves to be in the high latitude of 74°, especially on looking seaward, and seeing not a particle of ice as far as the eye could reach."

After this they saw several openings to the south-east, but *examined none*. The sea continued free from ice, and the weather moderate, but seldom clear. About latitude 70° they fell in with the largest ice-berg they had seen, upwards of two miles in length, and almost as much in breadth; it was calculated to weigh twelve or thirteen millions of tons. A large bear occupied the summit, who, on perceiving them advance to attack him, plunged into the sea from a height of fifty feet. They continued to trace the land down to Cape Walsingham, which forms the northern side of the entrance into Cumberland Straits, up which Davis proceeded 180 miles. During their passage they had the Aurora Borealis very frequently, and sometimes very grand and beautiful, but it had *no perceptible influence on the magnetic needle*, though the phenomenon is unquestionably connected with magnetism, as the great luminous arch was generally, though not invariably, bisected by the magnetic meridian.

The writer, remarking on the newspaper statement, apparently on demi-official authority, that there is *no passage from Baffin's Bay into the Pacific* says, "I am perfectly certain that no officer employed on the expedition ventured to hazard such an assertion." On the contrary, he is of opinion "that the whole land, from Wolstenholm's Sound round the head of the Bay, and down to the northern coast of Labrador, is so intersected by numerous straits or inlets, that, as far as appearances go, the land on the western side of Davis's Straits and Baffin's Bay is formed into a great cluster or archipelago of islands, *beyond which is the Polar Sea.*" The question, of any of these Straits being navigable, must be settled by experience.

The letter concludes with asserting that their observations had given a death-blow to Captain Flinder's theory, and thus describes them:

"We have swung the pendulum in latitudes where it was never swung before; and we have made such experiments on the dip and variation of the magnetic needle, close to the magnetic pole, as cannot fail to clear up, in a very considerable degree, the mystery which hangs over this intricate subject. Our

sudden departure from Doncaster Sound was a subject of so much deeper regret, as we had found, close to that inlet, the variation of the compass above 110° west, and the dip to exceed 86° ; so that, had we continued a very few degrees of longitude to the westward, perhaps 100 or 120 miles, we should certainly have stood on the magnetic poles, where in all probability our compasses would have ceased to act, at least with any degree of certainty, on board ship, as we found that the local attraction of the iron in the ships (and especially the Alexander) increased with the increase of the dip and variation ; and that the magnetic polar attraction decreased in the same proportion ; so that, at last, our compasses became so sluggish and so variable, that very little dependence could be placed on them."*

* Dr. Wollaston, in a paper in the Philos. Trans. 1810, alludes to the quantity of *uric acid* contained in the excrement of birds feeding solely on animal matter, and this expedition has brought forward an interesting analogous fact connected with that subject. The liquid of what has been called *red snow*, collected by Captain Franklin in the late polar excursion, and supposed to be tinged by the seeds of licken, on analysis by Mr. Brande, is found to contain *uric acid*, separable by potash, and precipitable from its alkaline solution by muriatic acid, in the form of a yellow powder. The uric acid is mixed with what appears to be a modification of the same substance, having many of the properties of what Dr. Marcet has called *Xanthic oxide*.

These important facts deserve the best attention of medical chemistry, as they seem to point to a remedy for the dreadful disorders, gravel and stone.

NOTICES OF VOYAGES UNDERTAKEN FOR THE DISCOVERY OF A NOTHERN PASSAGE,—*With observations on the Prospects of success from the present Expedition.* [*Continued from p.* 154.]

From the Edinburgh Magazine, for June, 1818.

THE Dutch on their return, having reported that there was a prospect of a passage through the Waygatz, the States General and Prince Maurice, in the following year, caused a new expedition of seven vessels to be fitted out.

The fleet set sail from the Texel, at sunrise, on the 2d of June 1595, and, on the 14th, came in sight of the coast of Norway. On the 22d one of the vessels came so close upon a large whale which lay sleeping in the water, that, had she not been awakened by the sailors' cries, and made off, the ship must have gone over her. It was the 23d of August when they arrived at the Strait of Waygatz. Here they met with a Russian fishing-vessel formed of the bark of trees sewed together, on its way to the mouth of the Obi, where the crew were to winter. The Russians presented them with a number of fat eider ducks, and in return were offered meal, butter, and cheese, which they rejected, but eagerly received pickled herrings, which they devoured entire, without any exception of head, skin, or tail. They assured the Dutch, that, for two months, or two and a half, the Strait would not be entirely shut. The Dutch then landed on the coast of Asia, here occupied by the Samoiedes. After marching some time without seeing any one, a mist suddenly clearing up, they found themselves close to a party of twenty natives. The wildness of their aspect and dress induced a pause, till the interpreter advancing, one of them drew his bow, with visible intent to discharge an arrow at him. The interpreter, almost frantick with alarm, called out, "Stop, we are friends." The Samoiede then laid down his arms, and placed himself in the attitude of speech. The interpreter, having again said, "we are friends," the other replied, "you are then welcome." An amicable communication was immediately established, and the Dutch found that their new acquaintances, though answering externally every idea which they had formed of savage men, were in their behaviour exceedingly rational and sensible. They were of small stature; their countenance broad and flat; their eyes small; their legs short; their knees bent outwards; in running and leaping they displayed the utmost agility. They were covered from head to foot with rein-deer skins, to which a few of the chiefs added some fragments of cloth and furs. Amid all their politeness, the strongest marks of distrust were vi-

sible. When, after a pretty long acquaintance, a sight of one of their bows was requested, it was refused with visible dissatisfaction. The king, which title, according to the immemorial usage of travellers, is conferred on the most noted personage in the groupe, kept a jealous watch over all their proceedings. Their alarm became much greater when they witnessed, for the first time, the discharge of a musket; they then "ran and danced like madmen." The Dutch, however, having explained that no harm was intended, and that these instruments were merely used instead of their bows, their terrours subsided, —and they even formed themselves into rows, to view the exercise of firing at a mark.

A cordial parting then took place, the Dutch sounding trumpets and waving their bonnets, while the natives replied by their national tokens of cordiality. But scarcely had they embarked, when they saw a man running violently up to them, with every symptom of rage and reproach. On inquiring the motive of his wrath, it proved to be a piece of stone rudely cut into some semblance of a human figure, and which, it seems, was one of their national idols. One end, in fact, was a little rounded, to give it the appearance of a head. It had in front a little prominence to represent a nose, two little holes above for the eyes, and one below for the mouth. The Dutch had seen many of these along the coast; and at one point no less than a hundred, from which circumstance they gave it the name of the Cape of Idols. Before them appeared heaps of ashes and rein-deer bones, whence it was inferred, that the natives had been employed in offering sacrifices to these uncouth divinities.

The Dutch now landed on Nova Zembla; and a party of them engaged in the search of a species of sparkling stones, which bear some resemblance to the diamond. Two of the number, fatigued with the exercise, lay down near each other, when one of them suddenly called out, "Who is that taking me by the neck?" His companion, raising his eyes, exclaimed, "Oh! my friend, it is a bear." The monster was instantly seen darting his tusks into the head of his victim, and licking the blood which streamed from the wound. The other ran, and with loud cries implored the aid of his companions, who hastened to the spot, sixteen in number, armed with pikes and muskets. The animal, undismayed by this crowd of opponents, rushed forward with incredible fury,—seized another, carried him off, and soon reduced him to the same deplorable condition as his companion. At this horrible spectacle, the hearts of the stoutest failed; all took to flight, and ran with precipitation to the boats. Here a consultation was held, whether they should venture on a fresh attack; and many urged, that the fate of the sufferers being now sealed, such a step would only be incurring new danger, without any rational motive. Yet the united impulse of rage and valour plucked forth three champions, who determined, since they could not save their comrades, at least to avenge them. They found the monster so busied with his horrible meal, that he did not even observe their approach; but, as they kept still at a respectful distance, the first three shots failed; when one advancing nearer, lodged a ball in the head. The bear, without quitting his hold, merely lifted up his head, raising with it the body in whose neck his tusks were still fixed: but, as he soon grew visibly faint from loss of blood, the sailors rushed forward and covered him with sabre wounds; and at length one of them, leaping on his back, severed the head from

the body. To the last moment, however, he never quitted hold of his prey. The sailors then collected and interred the mangled remnants of their ill-fated companions.

The damp which this incident threw upon their spirits, was soon increased by the appearance of ice in vast quantities; and they in vain attempted to make their way through the Waygatz. The ships, therefore, assembled at the opening of the Strait, and held a consultation whether they should renew their efforts; but, as the council was sitting, a formidable array of ice mountains was seen entering the Waygatz, and bearing down upon them; the view of which cut short their deliberations, and made them turn their sails, with all speed, to the westward.

After this failure, the Dutch government would engage in no farther undertakings; but the Council of Amsterdam equipped two more ships, with Heemsherk as master, and Barentz as pilot. They set sail in the beginning of May 1596, and after passing Norway, steered farther to the north than usual. On the 5th of June, those on deck called out, "What a multitude of swans are swimming." Others, however, observed: "These swans have much the appearance of icebergs." This last remark proved true; they soon found themselves in the heart of the ice, and sailed through it, as between two coasts. Continuing their course northwards, they arrived first at Bear Island, and then at Spitzbergen, and were probably the first navigators who visited that great mass of polar land; but finding that this was not Nova Zembla, and that they were too far north, they changed their direction, and came in sight of the southern part of Nova Zembla. They coasted its western shore, having much ice to struggle against. At length they carried the northern point, which they named Cape Desire, and seeing the land now stretching to the south-east, and the water to be free from ice, they began to entertain great hopes of success. Soon, however, the ice began to collect and thicken around them, and they were obliged to put into a port which they called Icy Harbour,—and to which, after a vain attempt to proceed southward, they were forced to return. The icebergs now bore down from all sides, and soon completely inclosed them; so that, after some time, they gave up all hopes of reaching home that season, and resigned themselves to the terrible prospect of wintering in Nova Zembla. The ice soon heaved up the vessel, sometimes so much on one side as to threaten to overturn it; but the balance was restored by a similar rise on the other side. At the same time, there was the most frightful cracking both without and within the vessel, which they were constantly afraid would go to pieces, but only some beams started. They found it necessary, however, both for warmth and safety, to think of forming some kind of habitation. Materials were fortunately afforded by those woods of mysterious origin, which float over all the polar seas. The coast presented a number of large trees with their roots, which had been cast ashore; but the forming these into a house was attended with immense hardship. It was impossible to make a foundation, as the largest fire which could be kindled had no effect in softening the ground. A sailor having put a nail into his mouth, it froze to the lips, and when it came away brought blood along with it. Meantime, they were obliged to carry all their provisions and cooking utensils to the lowest part of the hold, to escape the effect of the frost. A barrel of strong Dantzick beer, having been exposed to the cold, burst; but its frozen

contents were found adhering to the sides of the vessel like strong glue. When melted, the liquor tasted like pure water, and the whole strength was found concentrated in the heart, in a small portion which still remained liquid. About this time their hut was completed, and they began to move their stores thither. A west wind now blew, and they were tantalized by discovering the sea on all sides, as far as the eye could reach, entirely open, and only the spot on which their bark was moored, surrounded by the ice as by a wall. The sun, their last comfort, was rapidly disappearing. On the 1st of November he could still be perceived; next day only one-half his disk; on the 4th, merely the top of it; and on the following day there was no sun at all. They were now at a loss to count the time, and sometimes lay till mid-day, not knowing whether it was day or night. The snow fell in such quantities as made it impossible to stir out for days together; it also shut up their chimney, and exposed them to the alternative of perishing with cold, or being suffocated by smoke. The only remedy was to lie all day in bed, the cook only rising to prepare the victuals; they afterwards contrived to get stones heated and placed around their beds. On the 1st of December, they heard a crash, as if all the mountains that were piled around them had burst, and fallen in fragments over each other. Accordingly, when they could get out, they saw the sea open to a great extent; but the cold became more and more intense. They had ice two inches thick on the floor and walls, and even in the beds. The leather of their shoes froze like horn, and they were obliged to throw it off and cover their feet with sheep skins. At length the fire seemed to cease to afford heat; their stockings were burning before any warmth was felt, and even then they were advertised of the fact by no sense but that of smell. The pimples froze on their faces, and they became all white with frost and snow. Their alarm now was deep and serious; for it appeared certain, that if the cold became at all more intense, it must certainly kill them. The light, however, began to increase a little; and one day on walking out, they described a faint blush tinge the southern horizon. This first dawn of the polar morning revived in their hearts the hope that was almost extinguished. They felt also some mitigation of the cold; and this became evident, when a larger fire than usual being kindled, several of the icicles which hung from the boards and ceilings, broke off and fell to the ground; an effect which no fire had before produced. On the 24th, three of the sailors walking out believed they saw the edge of the sun's disk on the horizon. They ran in overjoyed with the intelligence; but Barentz declared it impossible that it could appear for fifteen days longer. They went out, however, on the 25th and 26th, but could discover nothing for mist. till, on the 27th, the mist dispersing, they saw, standing on the verge of the horizon, the full orb of that great luminary. Their scepticism had been owing to their ignorance of the effect of refraction. Their situation now improved, though they had returns of as intense cold as ever, yet hope always supported them. They now, however, recommenced their warfare against the fierce tyrant of the northern wilds. In building the hut and removing to it, they experienced almost daily attacks from the polar bear; but during the extreme cold, that animal disappeared, and was succeeded by the white fox, an innocuous visitant. In February, the fox again gave place to the bear. On the 6th of April one approached

the hut, and the door being unfastened, made desperate attempts to force it, but the master placing himself behind, succeeded in keeping it. The animal then climbed to the roof. and attacked the chimney with such force, and a roaring so tremendous, that they expected every moment he would have torn it down; but he at last departed. Another came up close to a man who was keeping guard at the door, but looking another way. Roused by his companions, he had only time to turn and fire; and if the piece had missed, which, from the damp state of the powder and firelock, was most probable, he would not only have perished, but the bear probably would have entered the hut, where. it is observed, "he would have made strange havock."

In May, the weather becoming tolerably mild, the crew became clamorous to leave this fatal place, and urged the plan of proceeding in the boat, to which the captain, who at first wished to wait till the ship could be got off, at length agreed. On trial, however, their strength. exhausted by long suffering, appeared unequal to the task of dragging it afloat. The captain now warned them, that there was no alternative, unless they felt inclined to become citizens of Nova Zembla, and to leave their bones there. These images roused all their remaining vigour, and after enormous labour for about a month, they succeeded in refitting the boat, and dragging it into the sea. In sailing round Nova Zembla, they were repeatedly inclosed by the ice. and gave themselves up for lost. They got through, however, and near the southern extremity found a party of Russians, who treated them with great humanity. They then sailed along the coast till they arrived at Kola in Russian Lapland, where they found a Dutch ship, which conveyed them home, and they were received by their countrymen with equal joy and surprise.

Having thus given an account of some remarkable voyages undertaken for the discovery of a north-east passage, we shall now proceed to notice those which were made with the view of finding a passage by the north-west.

The unsuccessful attempt of Pet and Jackman seems to have diverted the English from farther attempts to discover a passage in an eastern direction. The north-west passage, or that round the northern coast of America, engrossed thenceforth almost all their efforts. In 1576, Martin Frobisher, a seaman of great reputation, was sent by Queen Elizabeth to explore this naval route. He set sail on the 7th of June, and on the 26th passed Fowla, the last of the Shetland Islands. On the 11th he came in sight of Friesland, which appears in our maps as the southern extremity of Greenland. He found it "rising like pinnacles of steeples, and all covered with snow." He sailed straight west, and saw what he supposed to be the coast of Labradore. On the 1st of August, he saw a large island of ice, which, on the 2d, fell, "one part from another, making a noyce as if a great cliffe had fallen into the sea." He then touched at several islands, about one of which seven boats, with a considerable number of people, were observed. "They be like to Tartars, with long blacke haire, broad faces, and flat noses, and tawnie in colour." They were at first shy, but some trifling presents soon produced familiarity. The English then sailed to the opposite side of the island, and took several of the natives on board. Frobisher sent a boat to convey them on shore, giving strict directions to land them at a rock, and not near the body of the natives; "but the wilfulness of his men was such," that

they disregarded this injunction, and the consequence was, that neither boat nor men were ever more seen or heard of. The next and following days the English came near the shore, fired guns, sounded trumpets, and saw several boats, but could not come up to them, and were unable to penetrate in any degree the fearful mystery in which the fate of their countrymen was involved. By ringing a bell they enticed one of the natives on board, and carried him with them to Britain, for which they immediately after set sail. [*To be Continued.*]

AMONG THE ICEBERGS.

MENTION is often made of the encounter of ships with icebergs in crossing the Atlantic; but we have never seen a more graphic description of one of these perilous encounters than the following by Miss Mary S. Deering, which we find in the *Portland Transcript:*

"Always on the sunshine of Paris lay the shadow of our journey home, and well might it cast a shadow. Three or four seasick days of the voyage are a blank. Then comes a gray fog winding round and round us its cold coils till we are helpless. Gradually we come to know that we are in a very forest of icebergs, groping our way through them. Then for days we lie quite still save as we drift in the current, rising and falling with the waves like seaweed. How we longed for the sound of the screw that before we had execrated. How we longed for and dreaded the sound of another whistle answering our own constant calling through the fog. As often as once in five minutes icebergs went drifting by, and at last one morning we found ourselves sixty feet away from a mass of ice covering acres of surface and towering far out of sight in the fog. Face to face with possible shipwreck one comes to know what life is and to feel what death may be, and that morning every soul on deck, seven hundred in all, stood in perfect silence, while reversing her engines, our ship crept slowly back and the ice swept by. That afternoon a

ship faintly outlined through the thick fog, asked us, 'Have you seen a wreck?'

"'No!'

"'The Vicksburg struck on an iceberg four days ago and went down in sixty fathoms. We are looking for her boats!'

"A sharp cry from the steerage told us that some poor body's friends had sailed in the Vicksburg, and as we watched the ship go as she had come, like a spectre, we looked at our own little boats and knew with a shudder at our hearts what they would be to seven hundred people. Every heart went out to Captain Ritchie as his honest, earnest face came among us, and everybody felt that if manliness, courage and caution could bring us through our voyage, it would be done. Two days later the fog rolled up as a curtain rises. Blue and tranquil and bright, lay the sea. Against the sky icebergs stood out like the spires and domes, and huge buildings of a near city, flashing under the sunlight midst faint tints of gold, and rose, and blue. We gladly looked our last on their splendors as we cut our way swiftly and smoothly among them, and I have no great pleasure in the idea that at the end of a year's sight-seeing I have probably more accurate, available knowledge of icebergs than anything else."